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SOME NOTES ON IDEAL OUTPUT

I

THIS article is an exercise in a branch of the economics of welfare. It is based on Professor Pigou's treatment of the manner in which a redistribution of resources can raise the national dividend above the level attained under conditions of *laissez-faire*.[1] The earlier portion is devoted to the question of external economies and diseconomies, the latter portion to the question of imperfect competition.

I shall follow Professor Pigou, in the *Economics of Welfare*, in assuming that factors of production are always kept fully employed. It is unnecessary to-day to point out that all forms of the "diversion argument" break down at a time when unemployment prevails.[2] The precise meaning of full employment is less clear. That the existence of uncultivated land does not invalidate the methods and conclusions of the *Economics of Welfare* is sufficiently obvious. That the existence of unemployed labour upsets all these arguments is equally obvious. But in what way labour differs from land is not completely apparent. That, however, is a matter for separate discussion. We shall throughout assume full employment, without inquiring further into the meaning of such an assumption.

We shall assume, furthermore, that money can be employed as a measure of utility, the price of any commodity denoting its marginal utility to the consuming community and the price of any factor of production the marginal disutility involved to those

[1] The methods employed are those of Professor Pigou. For the extension of the subject-matter I have drawn largely on the teachings of Mr. Shove (a small portion of which is to be found in his article on "Varying Costs and Marginal Net Products," ECONOMIC JOURNAL, June 1928, pp. 258 ff., though the further elaboration of the matter, deferred for "another occasion" (*ibid.*, p. 265), has never yet been published), and on Mrs. Robinson's chapter on "A World of Monopolies" (*Economics of Imperfect Competition*, Chap. 27), while I have also taken much from Mrs. Robinson's reply to Mr. Fraser, *Review of Economic Studies*, February 1934, pp. 137 ff.

[2] *Cf.* A. C. Pigou, in a letter to *The Times*, June 6, 1930.

who supply its service. In other words, our discussion will be conducted as though income were equally distributed. In fact income is not equally distributed, and the marginal utility of money is different to different individuals. The considerations to which this inequality gives rise, and the types of interference which it justifies, belong to a separate compartment of the economics of welfare. With that compartment we shall not be concerned in this discussion, which is to be conducted as though all individuals were alike and the marginal utility of money were the same to everybody—or, to be more precise and less stringent, to the *average* [1] consumer of every commodity. It is only, I think, in this sense that it is possible to appreciate Professor Pigou's distinction between the *size* of the national dividend and its *distribution*.[2] There is no such thing as a *physical dividend* which we can talk of maximising. Any method of weighting the various constituents of the national dividend must have recourse to money as a measure of price, and by implication of utility. What is meant by maximising the *size* of the national dividend without reference to its distribution is maximising the satisfaction which *would be* obtained *if* " differences in the marginal utility of money to different people " [3] did not exist.[4]

Even on that understanding, an increase in the size of the national dividend is not necessarily tantamount to an increase in economic welfare. As Professor Pigou points out, if " the whole

[1] This is no crude mathematical average. It must pay regard to the economic importance of commodities as well as to the physical amounts consumed.

[2] *Economics of Welfare*, p. 123. Unless otherwise stated, references to the *Economics of Welfare* are to the fourth edition (1932).

[3] *Ibid.*, p. 802.

[4] Many will share Mr. Dobb's suspicion " that to strive after such a maximum is very like looking in a dark room for a black hat that may be entirely subjective, after all " (ECONOMIC JOURNAL, December 1933, p. 594; see also, in particular, *ibid.*, p. 591). Mr. Lerner is, of course, mistaken in supposing that " there can be no doubt about the objective nature of the maximum " (*Review of Economic Studies*, October 1934, p. 57). " If the marginal productivity," he says, " of different factors do not bear to each other the same ratio in the production of different commodities, it will be possible, by re-shuffling the factors to produce *more* of some or all of the commodities produced, without producing less of anything or applying more resources or energy to production." That is perfectly true, and important. But the *ratio* of the marginal productivities of factors is by no means the sole consideration. " Too little " of a commodity may be produced with the aid of " too little " of all the factors, combined in such proportions that the ratios of their marginal productivities are the same as in other uses. Mr. Lerner's " objective " standard then breaks down completely. In more ordinary cases it is capable of a strictly limited application, while only in extremely peculiar cases, where the " fault " lies entirely with the proportions of the factors and not at all with their aggregate amount, is the " subjective " element entirely absent.

community was compelled by law to work for eighteen hours a day," the national dividend might be increased, but "it is practically certain that the satisfaction yielded by the extra product would be enormously less than the dissatisfaction caused by the extra labour." [1] For the most part Professor Pigou confines himself to the assumption that "a given quantity of productive resources is being employed," [2] and is thus able, as Mr. Fraser has pointed out,[3] to avoid all difficulty. It will be simplest for the moment to retain Professor Pigou's assumption—that the supply to society of all factors of production is perfectly inelastic in terms of natural units [4]—but it will be dispensed with at a later stage.[5]

To define marginal private product and marginal social product of any factor A in a particular occupation, we imagine the total amount in existence of factor A to be increased by one unit and that additional unit to be employed by one particular firm, X, engaged in this occupation. The total amounts in existence in the form of natural units of all factors other than A are imagined to remain constant and the total of payments made by firm X to all factors other than A is imagined to remain constant. The increase in the value of firm X's output, which results from increasing its employment of factor A by one unit, is called the *marginal private productivity* of factor A to firm X. The increase in the amount of firm X's output is called the *marginal private physical product.* The total increase in the community's output (including the increase in firm X's output) is called the *marginal social physical product.* In general the marginal social (physical) [6] product is not capable of quantitative measurement. It is a hotch-potch, consisting of "the total . . . product of physical things or objective services due to the marginal increment of resources in any given use or place, no matter to whom any part of this product may accrue." [7] But the value of this hotch-potch is a definite thing; each constituent is valued at its market price, and so we get the *value of the marginal social product.* Utility being measured in terms of money, price is

[1] *Economics of Welfare*, p. 85. [2] *Ibid.*, p. 136.

[3] *Review of Economic Studies*, October 1933, p. 50.

[4] Thus we assume the existence of a fixed number of men with very strong lungs, but not a fixed number either of glass-blowers or of trombone-players.

[5] See p. 19 and p. 35 below.

[6] In what follows the word "product" will be taken to mean "physical product" as opposed to "productivity," which is the "value of product."

[7] *Economics of Welfare*, p. 134.

equal to marginal utility, and so the value of the marginal social product is equal to the addition to total satisfaction which results from increasing the total quantity of factor A by one unit and applying that unit to firm X. "Whenever, therefore, the value of the marginal social . . .[1] product of [a factor] is less in any one use than it is in any other, the money measure of satisfaction in the aggregate can be increased by transferring [the factor] from the use where the value of the marginal social product is smaller to the use where it is larger." [2] The amount of a factor in any use will be *ideal* when the value of the marginal social product of each marginal unit (unit situated on the margin of transfer) is the same in that use as in the alternative occupation.[3]

If the increase in the output of firm X has no effect on the efficiency of any given combination of factors outside firm X, the marginal social product is identical with the marginal private product.[4] If the increase in output has a favourable effect on efficiency elsewhere, production is attended by *external economies*. The marginal social product then comprises, in addition to the marginal private product, increments of output produced by firms other than X; and the value of the marginal social product exceeds the value of the marginal private product. In the converse case, where production is attended by *external diseconomies*, the value of the marginal social product falls short of the value of the marginal private product.

[1] See W. L. Valk, *Principles of Wages*, p. 33, referred to by D. H. Robertson, *Economic Fragments*, p. 47, note.

[2] *Economics of Welfare*, p. 136.

[3] It is assumed, with some degree of reason, that in such a situation an infra-marginal unit will have a greater marginal social product in the given occupation than in any other.

[4] This statement is neither entirely obvious nor entirely accurate. In defining the marginal products we have had, for an obvious reason, to postulate that "the total of payments made by firm X to all factors other than A" is to remain constant, *not* that the amount of *each* factor other than A employed by firm X is to remain constant (*cf.* D. H. Robertson, *loc. cit.*, and Joan Robinson, *op. cit.*, p. 237). In general, there will be a diversion of some of these factors away from firm X to other firms, and of other of these factors to firm X from other firms. The marginal social product is therefore *not* identical with the marginal private product. But under conditions of perfect competition, the price of each factor is equal to the value of its marginal private product in the use from or to which it would be diverted. Since the total cost to firm X of all factors other than A remains constant, the *values* of the increments and decrements of the outputs of all other firms, brought about as a result of this diversion, must add up algebraically to zero. It follows that if perfect competition prevails everywhere, the *value* of the marginal social product is equal to the *value* of the marginal private product. That is all that is required to validate the argument of the text. If competition is not perfect, the proposition is not necessarily true. But the discrepancy, which there is no reason for supposing to be large, will not lie consistently in one direction or the other, and will therefore be disregarded.

The nature of the allocation of the external economies (or diseconomies) over the field of industry in not germane to our present purpose—their aggregate amount is all that matters. In one case an increase in a firm's output may lead to considerable economies to the firms in the same industry; in another case the degree of economy may be much smaller, but it may be spread over a far wider field—over a group of industries, over a particular locality, or over all industries. If the aggregate of the induced economies is equal in the two cases, the divergence between the values of the marginal private and social products is the same. The convenience of this method of defining external economies and diseconomies is sufficiently obvious. If the terms were restricted to the economies and diseconomies accruing to other firms *in the same industry*, we should be in danger of overlooking the effects, which must often be more considerable, produced in other industries. Moreover, our definition would depend on our definition of an industry, a matter which must always be somewhat arbitrarily determined, except perhaps in the case of perfect competition (though even there the question is complicated by the existence of joint products and subsidiary firms). It is not with any particular industry that we are at the moment concerned. Our attention is concentrated on the particular firm, and the repercussions of its behaviour on industry as a whole.

II

We begin by assuming that conditions of perfect competition prevail everywhere. Then the price of any unit of a factor is equal to the value of its marginal private product. Each unit of every factor will find its way into that industry where the value of its marginal private product is greatest. Every marginal unit has equal values of marginal private product in the two industries separated by the margin. We have seen that output is ideal when the margin is so situated that the values of marginal social product are equal. It follows that the ideal output of any industry is that which causes the values of the marginal social products of the marginal units of each factor to have the same ratios to the values of their marginal private products as they would in the industries from which they have to be drawn. If, for each factor taken in turn, every firm in every industry is responsible for the same aggregate amount of external economy or diseconomy —so that the ratio of the value of the marginal social product of each factor to the value of its marginal private product is every-

where the same—the output of every industry is ideal. In general we should want to contract those industries where a given increase of output on the part of a single firm gives rise to an aggregate of external economies which falls short in amount of that provided in the industries with which they compete for the use of their factors of production; while we should want to expand those industries which provide more economies than the industries from which they take their factors. On the assumption that every industry competes for its factors with a group of industries which is uncorrelated with it in nature and large in extent, so that it can be regarded as a random sample of industry as a whole, it is desirable to divert factors of production from those industries which are associated with less than the average amount of external economy (per unit increase of employment) to those which are associated with more than the average. This assumption must frequently be very wide of the facts,[1] but it is a convenient one to make in the interests of simplified exposition. We shall retain it on the understanding that any statement which is made with its aid can be retranslated, by an obvious modification, into the more complicated version that we should have arrived at if the assumption had not been adopted. Then " the national dividend would, obviously, be increased by transferring resources from industries where . . . net external economies are small or negative to those where . . . net external economies [are] large." [2] We may arrange all industries in descending order of magnitude in respect to the external economies associated with them (diseconomies being regarded as negative economies). At a certain point, represented by the " average " industry, a line may be drawn. Then all industries above the line have to expand to reach their ideal outputs and all those below the line have to contract, the extent of the socially desirable expansion or contraction varying directly with the distance from the line. The direction and extent of an industry's deviation from the norm in respect to external economies and diseconomies determine the direction and extent to which it is socially desirable to alter its output.[3] It is not the nature of industries in any absolute sense,

[1] Especially if our " industry " is merely a subdivision of what is normally called an industry—for instance, the spinning of one particular count of cotton yarn. In such cases the assumption will lead to particularly absurd conclusions.

[2] G. F. Shove, *loc. cit.*, p. 266. See also F. H. Knight, " Some Fallacies in the Interpretation of Social Cost," *Quarterly Journal of Economics*, August 1924, p. 592, and Joan Robinson, *Review of Economic Studies*, February 1934, p. 140.

[3] The extent, but not the direction, of course depends also on the shapes of its demand and supply curves, which determine how rapidly a change in output will react on the price of the product, and so on the values of the marginal products.

but their idiosyncrasies, which provide a case for interference. If all industries were alike, interference could do no good. In the words of Professor Pigou, " if in all industries the values of marginal social and marginal private net product differed to exactly the same extent, the *optimum* distribution of resources would always be attained, and there would be, on these lines, no case for fiscal interference." [1]

But if external economies, while universal, are milder in some industries than in others, then it would " be possible—at all events in theory—to increase the national dividend by shifting resources from " one group of industries to the other.[2] So long as attention is concentrated on this paragraph from the *Economics of Welfare*, there is no difference in the conclusions suggested in this article from those of Professor Pigou. It is, however, quite clear that there is a complete lack of harmony between this particular paragraph, which first made its appearance in the third (1929) edition,[3] and the rest of Professor Pigou's treatment, which results in the conclusion that " if in any industry the value of the marginal social net product of investment is greater than the value of the marginal private net product, this implies that the output obtained is less than the ideal output: if the value of the marginal social net product is less than the value of the marginal private net product, this implies that the output obtained is greater than the ideal output." [4] In other words, Professor Pigou might be interpreted to be saying, *all* those industries in which there are any positive external economies—no matter how small their amount—it is socially desirable to expand, and it is *only* those industries in which there are actual external diseconomies—not merely an amount of economies which is inferior to the average—that it is socially desirable to contract. The source of the disharmony is easily revealed, and indeed is elucidated by Professor Pigou himself in the course of this same paragraph which is

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Mr. Fraser is clearly wrong in suggesting that Professor Pigou's analysis " contains no suggestion that the conditions of demand bear on the point at issue " (*Review of Economic Studies*, October 1933, p. 50, note; *cf. Economics of Welfare*, pp. 803, 804). As an example of the influence of the conditions of supply, it may be noted that while the fact of " scarcity " of factors of production—the fact that the factors of production are not all of them in perfectly elastic supply to the industry—has nothing whatever to do with the question of *whether* it is socially desirable to alter the industry's output, it does affect the *amount* of the alteration, if any, which it is socially most desirable to bring about.

[1] *Economics of Welfare*, p. 225.
[2] *Ibid.*
[3] P. 226.
[4] *Economics of Welfare*, p. 224.

responsible for the disharmony. It has, he explains, been "tacitly assumed that in the main body of industries [the values of the marginal social product and of the marginal private product] are equal, and, therefore, that there is scope for increasing the national dividend by shifting resources between . . . this body of industries" and a particular industry in which "the value of the marginal social net product . . . differs from the value of the marginal private net product." [1] It is assumed, in other words, that external economies and diseconomies are rare phenomena; that in most industries they do not occur, so that it is only with a few exceptional cases that we have to deal. If external economies and diseconomies are sufficiently rare, their average amount is approximately zero.[2] It follows that if external economies are anywhere appreciable, they must necessarily exceed the average, while they will only fall short of the average in the shape of actual external diseconomies. Once this assumption is granted, there ceases to be any conflict between my version of Professor Pigou's conclusions and his own.

The assumption will be found to run through most of the *Economics of Welfare*. It is only if marginal private product and marginal social product are identical in all except a few exceptional cases that it is clear that self-interest, which "will tend to bring about equality in the values of the marginal private net products of resources invested in different ways, . . . will not tend to bring about equality in the values of the marginal social net products except where marginal private net products and marginal social net product are identical." [3]

[1] *Economics of Welfare*, p. 225.

[2] It would also be zero if external economies and diseconomies, taken over the whole field of industry, happened on the average to balance. But clearly this would be an absurd assumption, whereas the assumption in the text represents a highly reasonable approximation.

[3] *Economics of Welfare*, p. 172. *Cf. ibid.*, p. 250. The point is brought out yet more clearly in the following passage from the second edition (1924) (p. 152), which appears in substantially the same form in the first edition (1920) (p. 150) and in *Wealth and Welfare* (1912) (p. 149):—"The value of the marginal social net product, in any selected industry, will exceed or fall short of the value of the marginal social net product yielded in the generality of industries, by the amount by which it exceeds or falls short of the value of the marginal private net product in the selected industry." *Cf.* also the following statement in Appendix III of the first edition (p. 937):—"On the average of 'industries in general,' we may presume that the earnings per unit of productive resources tend to equality with the value of the net product of their marginal increment."

In the chapter on "Increasing and Decreasing Supply Price," the assumption is expressed, in a rather implicit form, by the device of an "archetypal industry." We are told to "imagine that there exists an archetypal industry, in which the values of the marginal private net product and of the marginal social net product of investment are *both* equal to one another and *also* stand at a sort of central

Quite apart from the fact that it is not based on any special assumption as to the rarity of external economies and diseconomies, the method suggested in this article has the further advantage that it does not entail any appeal to the somewhat perplexing distinction between increasing (constant, or decreasing) supply price *from the standpoint of the industry* (or *simpliciter*) and increasing (constant, or decreasing) supply price *from the standpoint of the community*.[1] It may be convenient at this point to summarise the various reasons [2] why there is an absence of anything but a mild degree of correlation between the fact that an industry is producing under conditions of falling supply price and the existence of a case for subsidising its output (and between the

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level representative of industries in general" (p. 213). This must be taken to mean that *in industries in general* the values of the marginal private and social products *are* equal, divergences being rare phenomena, though it is stated in a footnote that "it is not necessary to suppose that this central value is actually attained in any industry; it is rather to be conceived as the level which would be attained under conditions of simple competition in an industry of constant supply price." It would, it might be suggested, be better to say that it is the level which *is* in fact assumed to be attained in most industries under the conditions which actually happen to prevail in the world as we know it. In earlier editions the footnote is concluded with the following words :—" or as the average of the levels which would be attained in all industries under these conditions, if their departures from constant supply price in both directions balanced each other " (third edition, p. 215; with slight modifications in second edition, p. 192, and first edition, p. 189). This phrase would have to be interpreted to mean that, taking the average of industries as a whole, external economies and diseconomies just about balance; *cf.* my last footnote, and P. Sraffa, ECONOMIC JOURNAL, December 1926, p. 541, note.

[1] *Economics of Welfare*, pp. 217, 218. But this article can claim the sanction of tradition, for in this respect it marks a return to the method employed in the first and second editions of the *Economics of Welfare*, where, apart from the treatment in Appendix III of the first edition (pp. 931 ff.), the whole question is discussed without any mention of the concept of *supply price*, which had, however, formed the basis of the pioneer treatment in *Wealth and Welfare* (pp. 173 ff. : the distinction between *private supply price* and *social supply price*, there drawn on p. 172, must not be confused with the distinction drawn in the later editions of the *Economics of Welfare* between *the standpoint of the industry* and *the standpoint of the community*), and had led to Allyn Young's remark (*Quarterly Journal of Economics*, August 1913, p. 684; quoted by Professor Robbins, ECONOMIC JOURNAL, March 1934, p. 11) that "the problem as a whole, it seems to me, is one to which the general theory of the diminishing productivity of individual factors is appropriate, rather than the curve of marginal supply prices."

Furthermore, this article follows an earlier tradition in being free of all reference to the concept of *transfer elements* (*Economics of Welfare*, p. 218), which had to be introduced into the second and all later editions as a result of Allyn Young's criticisms (*loc. cit.*, p. 683; see also first edition of *Economics of Welfare*, pp. 934, 935, and second edition, p. 194).

[2] Two further reasons must be deferred until later; see p. 14, note, and p. 15, note.

slope of its supply curve [1] and the amount of the optimum subsidy, if any).[2]

(*a*) The fall in the supply curve may not be due to economies [3] (or not entirely). The supply curve of the product may fall if a factor of production is supplied under conditions of falling [4] supply price (Mrs. Robinson's "rare type" of increasing returns.) [5] But this is very unlikely to happen.

(*b*) The existence of economies may fail to be revealed (or to be fully revealed) in a falling supply curve owing to the existence of "scarce" factors, which are supplied to the industry under conditions of rising supply price.[6]

(*c*) The economies may largely accrue to other industries rather than (or as well as) to the industry under review.[7] It is only that part of the external economies which are enjoyed by the one particular industry that is reflected in its supply curve.

(*d*) The economies may be less in magnitude than those which

[1] The slope of the demand curve is, of course, also a factor; *cf.* above p. 6, note.

[2] It is easy to demonstrate the applicability of the same qualifications to the line of attack, initiated by Marshall (*Principles*, pp. 467 ff.) and corrected and elaborated by Mr. Fraser (*loc. cit.*, pp. 45 ff.), which is based on the use of the concept of consumers' surplus.

[3] External economies, since internal economies are not possible when competition is perfect. But it will be seen later that the availability of internal economies under conditions of imperfect competition provides a similar case for a subsidy.

[4] "Forward-falling," of course, not "backward-rising"; see *Review of Economic Studies*, October 1933, pp. 51 and 75, and February 1934, p. 138. I should like to thank Mr. Fraser (and also Mr. Kaldor, *ibid.*, p. 131, note) for the term "forward-falling," which he correctly substitutes (*ibid.*, p. 142) for my meaningless "downward-falling," though I am sorry that my note "does not help" him (*ibid.*) to decide definitely against his suspicion (*Review of Economic Studies*, October 1933, p. 51) that "when people will do more work the lower the wage rate . . . then a rise in the demand for resources will presumably be associated with a fall in their unit price."

Professor Viner points out ("Cost Curves and Supply Curves," *Zeitschrift für Nationalökonomie*, Vol. III, No. 1, p. 39) that costs will be falling in a more orthodox manner "if laborers should have a preference, rational or irrational, for working in an important rather than in a minor industry, and should therefore be willing to accept lower wages as the industry expands."

[5] *Economics of Imperfect Competition*, p. 348.

[6] This was pointed out by Mr. Shove, *loc. cit.* Professor Pigou had come very close to recognising the point, but his "scarce" factor was specifically confined to being a raw material (*Economics of Welfare*, second edition, pp. 195, 196).

[7] Cf. Marshall:—"The economies of production on a large scale can seldom be allocated exactly to any one industry; they are in great measure attached to groups, often large groups, of correlated industries" (*Industry and Trade*, p. 188; quoted by Mr. Sraffa, *loc. cit.*, p. 540); and F. H. Knight:—"The practical objective is to maximize the product of given resources and not to minimize the expenditure of resources in producing a given product" (*loc. cit.*, p. 587).

prevail on the average in industry as a whole, so that the industry under review is producing more, and not less, than its ideal output. Even if qualifications (*a*), (*b*) and (*c*) did not operate, a falling supply curve would provide a case for a subsidy only if the phenomenon of falling supply price was confined to a small number of industries. If it was a widespread phenomenon, it would be those industries with supply curves falling more rapidly than the average which should be expanded (to an extent varying directly with the deviation of the elasticity of the supply curve from the norm), while the others should be contracted.

(*e*) If economies are the exception, and not the rule, so that it is the outputs of only a small number of industries which have to be interfered with in order to bring them up to the ideal level, a scheme of bounties obviously offers the simplest method of bringing about the required diversion of resources, the funds for the bounty being raised by taxing all the other industries, in which there are no economies (and by taxing more heavily those industries, if any, in which there are diseconomies). But if economies are prevalent in a large number of industries, though in varying degrees, we cannot be certain that a complete scheme of subsidies and bounties, the one paying for the other, designed to bring the output of every industry to its socially desirable level, will involve subsidising (as opposed to taxing) *every* industry of which the output is to be expanded.[1] A particular industry's output *may* expand simply as a result of the imposition of taxes on a large number of other industries, in spite of the fact that yet other industries are at the same time being subsidised; and if this expansion would carry the industry's output beyond the ideal point, it is a tax and not a subsidy which is called for.

So far we have been assuming the universal prevalence of conditions of perfect competition. In doing so, we have been running a serious risk of pouring away the baby with the bath water. For external economies must usually take their ultimate origin in the internal economies of some subsidiary industry.[2] These will only exist if the subsidiary industry is producing under conditions of imperfect competition—if, for instance, it consists of a single firm or if a single subsidiary firm is just on the point of crystallising out as a result of the "disintegration" of processes.[3]

[1] This uncertainty will prevail even if there is no correlation between the elasticity of demand for a commodity and the amount of external economies afforded by its production; *a fortiori* if such a correlation does exist.

[2] See E. A. G. Robinson, *Structure of Competitive Industry*, p. 138.

[3] *Ibid.*, p. 111.

We must therefore abate our assumption of perfect competition sufficiently to permit of the utilisation of indivisible or "lumpy" units at below their optimum capacity. Marginal social product still exceeds marginal private product, and this divergence may still be expressed by the term external economy, in spite of the fact that the external economy can be ascribed to the internal economy of some subsidiary firm.[1]

Having now admitted a certain element of imperfect competition into our imaginary system, we should logically be obliged to defer further treatment of this portion of our subject until we had dealt with imperfect competition in the later stages of this article. But the principle which we require is sufficiently obvious and well known to be stated without proof. In a world in which perfect competition is the general rule, any element of monopoly will reduce the application of resources over the field to which it applies below the socially desirable amount.[2] What that means is that our subsidiary firms, which are producing under conditions of falling cost,[3] will, apart from interference, produce less than their ideal outputs. This, in fact, is the basis for a suggestion of Mrs. Robinson's.[4] The complicated system of taxes and bounties outlined above would have the effect—that, indeed, would be its *modus operandi*—of bringing the output of each subsidiary firm to its socially desirable level. In so far, for example, as railway transport is a source of external economy, the industries which make most use of railway transport would be expanded, while the others would be contracted, until the use of railway lines had increased to the point where freight rates were no greater than the marginal cost of transport.[5] "But it would be simpler," says Mrs. Robinson, "to give the subsidy direct to the railway so that the [price charged for transport] was made equal to its marginal cost to the railway." By this simple device the ideal distribution of resources can be attained with very little trouble.[6]

[1] The external economy takes the form of a vertical redistribution of factors, from "lower" to "higher" stages of production, in such a way as to improve their efficiency.

[2] See p. 22 below. [3] But see below, p. 14.

[4] *Review of Economic Studies*, February 1934, p. 140.

[5] On the assumption that all factors of production are in perfectly elastic supply to the railway, for it is only then that "marginal cost to society" is equal to marginal cost to the railway. Any element of monopsony raises the railway's marginal cost above "marginal cost to society." In what follows monopsony is neglected.

[6] The money for the subsidies, if not raised by ordinary taxation, could be obtained by a small uniform tax on industry as a whole. Some mal-diversion of resources would result from such a uniform tax, but it would be too small to be serious.

Those industries which make more use than the average industry of railways and other sources of external economies will be automatically expanded as a result of the cheapening of the products of these subsidiary industries, while the other industries will be automatically contracted, output being carried in each case to the ideal point. Dr. Clapham's economic boxes [1] need no longer remain empty. To assess the extent of external economies present in every industry, to compare this with the average, to decide in the light of this knowledge, and of some estimate of the elasticities of supply and demand, what rate of tax or of bounty is called for—all that may prove an impossible task; and Professor Pigou's brickmaking machinery [2] might lie eternally idle for want of the right kind of straw. But the straw required for the new kind of brick is obtainable with less difficulty; and so the machinery may one day prove useful. It is easy to recognise indivisible units which are being worked below their optimum capacity: railways and public utilities provide obvious, and very important, examples. In such cases any subsidy will do good, provided that it is not too large; and it is not very difficult to make a rough estimate of the subsidy required to equate marginal cost and price. The fact that monopoly depresses output below its ideal quantity is well known. The fact that it is desirable to interfere with monopolies, so as to induce them to produce more, is also well known. The whole problem thus resolves itself into an exercise in the control of public utilities. Dr. Clapham's economic boxes were full all the time, but the economists were looking on the wrong shelf.

One error in Mrs. Robinson's treatment should be pointed out. She takes as an example of a subsidiary industry providing external economies "a railway system which is working at falling average cost and *which is limited to charging prices which just cover its costs.*" The phrase that I have put into italics seems to me to be unnecessary. The only condition is that the price charged by the railway exceeds its marginal cost. What Mrs. Robinson clearly has in mind is that an increase in the demand for the railway's services might lead to a rise in the price of transport even though it led to a fall in the railway's average cost. That is obviously a very definite possibility. The economies which are brought about by an expansion in the main industry's output may fail to reveal themselves in a fall in the price of the product of the subsidiary industry, since *ex hypothesi* the subsidiary industry is not of the kind in which price is always kept down to

[1] ECONOMIC JOURNAL, September 1922. [2] *Economics of Welfare*, p. 228.

average cost by the entry of new firms; but the economies are nevertheless present, so long as marginal cost falls short of marginal utility, as measured by price.[1] The subsidiary firm may indeed be working at *rising* average cost and it will still give rise to external economies if it is free to maximise its profits, for the price charged will still exceed marginal cost. It is only if it refrains, or is prevented, from earning the maximum profit, that its price can be less than its marginal cost. But if its price *is* less than its marginal cost it is the cause of external *diseconomies*. Thus if the price charged by a railway or public utility is fixed by law at its average cost, external economies will be provided in the ordinary way so long as it is working at falling average cost, but if its output becomes so large that it is working at rising average cost it now becomes responsible for external diseconomies. We thus have a new kind of external diseconomy [2] to set beside the absentee landlords [3] and the raw materials which rise in price as more are imported,[4] and so somewhat to alleviate the rarity of Mrs. Robinson's "rare type" of diminishing returns.[5] It take its origin in "lumpiness," just like the ordinary type of external economy. For it is "lumpiness" which causes a firm's average cost to rise and it is "lumpiness" which prevents new competitors from entering the subsidiary industry and converting it into an industry of optimum firms, each producing at constant average cost. Just as ordinary external economies are best exploited by subsidising the indivisible units from which they take their origin, so this particular type of diseconomy calls for a tax on such subsidiary firms as are producing at a price which falls short of marginal cost.

It seemed to appear, at an earlier stage of this discussion, that in a system which consisted of identical industries no diversion of resources could do anything but harm. External economies might be available, but they would be present everywhere to an equal degree, and there would be no deviation from the norm

[1] This provides another reason why the case for a bounty may fail to be expressed in the slope of an industry's supply curve. A subsidiary industry may supply its product to the main industry under conditions of rising supply price even though it is associated with external economies.

[2] But not of sufficient importance to induce anybody to differ seriously from Mr. Robertson, who, as Edgeworth puts it, "in his graceful manner denies that any such phenomenon exists" ("The Revised Doctrine of Marginal Social Product," ECONOMIC JOURNAL, March 1925, p. 34).

[3] Edgeworth, *ibid.*, p. 35.

[4] *Economics of Welfare*, p. 221.

[5] *Economics of Imperfect Competition*, pp. 347, 348.

such as would provide a case for diversion. That conclusion must now be revised. If the economies take their origin in subsidiary industries, the case for expanding these subsidiary industries still holds good. No *horizontal* diversion of resources is called for, but it is in the social interest to divert resources in *a vertical* direction from the " lower " to the " higher " stages of production. Increased efficiency is obtainable by an alteration of the technique of production.

A similar point is illustrated by the case of smoke. If one industry emits an exceptional amount of smoke is is socially desirable to divert resources from that industry to other industries.[1] If all industries are equally smoky, no diversion as between industries is called for.[2] But it would be absurd to suppose that no kind of interference could in such a case increase the national dividend. Legal restrictions on the emission of smoke, and the encouragement of methods of preventing smoke,[3] would still have an important part to play. The fact is that our attention has so far been confined to the ideal *quantity* of an industry's output. We have not paid any attention to the ideal *method* of production. The two questions are quite distinct, and they may be equally important. The national dividend is maximised only when the value of the marginal social product of each separate natural unit of a factor is equal *in all possible uses*, both potential and actual. It is not sufficient that the value of the marginal social product of capital embodied in factory chimneys shall be equal in all industries. Capital must be transformed from other shapes into factory chimneys until factory chimneys are so high that the value of the marginal social product of capital embodied in factory chimneys is reduced to the level which accrues to all other embodiments of capital. This brings us to the class of " Divergences between Marginal Social Net Product and Marginal Private Net Product " [4] which Professor Pigou

[1] It is of the nature of smoke that it harms least those who make most of it. In other words, the external diseconomy is suffered almost entirely by industries other than the one in which it originates. Very little of an industry's smoke gets into its supply curve. But that does not alter the argument.

[2] We are here neglecting Mr. Robinson's fundamental distinction between " mobile " and " immobile " economies (*op. cit.*, p. 142), and the important questions of localisation which arise with it.

[3] *Cf. Economics of Welfare*, p. 184.

[4] *Ibid.*, Part II, Chapter IX. Here there ceases to be any correlation whatever between the case for interference and the shape of the industry's supply curve. The effect of " the primitive type of tenancy contracts " (*ibid.*, p. 177), to which Professor Pigou devotes a considerable portion of the chapter, is to raise the value of the marginal social product of resources applied on particular kinds of property to the purposes of maintenance and improvement above the generally prevailing

deals with before he comes to the divergences related with the phenomena of "Increasing and Decreasing Supply Price,"[1] and which are not open to the criticism, advanced above, that if all industries were alike, there could be no case for interference even though marginal social product were not always identical with marginal private product.

It is by now fairly evident that instead of thinking in terms of external economies and diseconomies, an alternative route is open to us. In all these cases the failure of *laissez-faire* to achieve the best of all possible worlds may be fairly laid at the door of the imperfection of the pricing system. In an ideal world price would always be equated to marginal cost to society, and all would be well. "Lumpy" units would be employed at ideal capacity, and every factory, having to pay for the damage which its own smoke caused to others, would emit the ideal quantity of smoke. The stimulus which is afforded by a growth in the scale of industry to inventive ingenuity and to the skill of labour can also be forced under the same head. But in this case the strain involved is considerable, and there is little point in incurring it, as opposed to the case of "lumpy" units, which we have seen to yield to treatment with far greater ease and simplicity if looked at from the point of view of a divergence between price and marginal cost than if looked at from the point of view of external economies and diseconomies. In each case that method of analysis is to be selected which is the more congenial to the objective in view. Thus in the case of smoke, if we are thinking of a levy designed to discourage the emission of smoke, it is more convenient to treat the problem in terms of the pricing system; but if we are thinking of a subsidy to encourage the use of smoke-consuming methods, it is best thought of in terms of external economies.

The emission of smoke can be said to upset the ideal pricing system, not only because the individual does not have to pay for the damage which he does to others, but alternatively because the individual does not have to pay an economic price for the air which he utilises. Now it is neither practicable to put a price on air nor convenient to imagine such a procedure. With polluting the atmosphere may be contrasted the act of congesting

value of marginal social product; the excess accrues to posterity, and arises from the fact that the temporary owner of the property does not reap the *normal* benefit or suffer the *normal* penalty of his actions.

[1] *Economics of Welfare*, Part II, Chapter XI.

the thoroughfare. Roads can be created at a certain cost and a charge can be levied for their use. A different line of attack is therefore to be commended. It is true that the provision of road-transport is commonly said to be attended by external diseconomies,[1] for an expansion of one firm engaged in this industry raises the costs of other firms. So long as roads are regarded as having the attributes of air, there is no need to quarrel with this view: just as smoke pollutes the air, so motor vehicles may be said to pollute the roads; and the case for interference may be based on the existence of external diseconomies. But the analogy with air is not altogether convincing. Roads, unlike air, are best regarded as composed of various factors of production.[2] When an individual transport firm increases its use of the roads, it raises the costs of other firms simply because it abstracts land, and other factors, from them: the rise in costs is due to the existence of a "scarce" factor, not to external diseconomies. In considering the application of all other factors, considered as one composite factor, to the factor "road," our definition of marginal social product—and by implication of external diseconomies, which are said to exist when marginal social product falls short of marginal private product—requires that the amount of road-space utilised by the firm which increases its output shall remain constant. It follows that the amount of road-space available to all the other firms also remains constant. Their output is consequently unaltered; and marginal social product does not differ from marginal private product. The case for interference must find a different basis. It is not necessary to look very far. Even in the absence of external economies or diseconomies, the situation is "ideal" only if each factor of production is paid its "economic return," *i.e.*, the value of its marginal product. In the case of the roads this would require a levy equal to that which would be extorted if the roads were privately owned by a large number of competing landlords.[3] If the payment exacted for the use of the roads—in the shape of the licence duty, the petrol tax, and

[1] *Cf.* J. Viner, *loc. cit.*, p. 41, and N. Kaldor, ECONOMIC JOURNAL, March 1934, p. 66.

[2] An alternative would be to regard the use of roads as a factor supplied by some subsidiary industry. External diseconomies could then quite properly be said to prevail, in accordance with the argument of p. 13, so long as the price charged for the use of the roads fell short of the marginal cost of using them. This line of approach must lead to the same conclusions as the one indicated in the text.

[3] *Cf.* F. H. Knight: "If the roads are assumed to be subject to private appropriation and exploitation, precisely the ideal situation which would be established by [an] imaginary tax will be brought about through the operation of ordinary economic motives" (*loc. cit.*, pp. 586, 587).

the like—falls short of this "economic return," the ratio of vehicles to road-space is greater than is socially desirable. In other words, the roads are cultivated too intensively—beyond the point where the value of the marginal product of a motor-car is equal to its cost. The same argument applies, as Professor Viner has pointed out,[1] "in the grazing, hunting and fishing industries, where no rent is charged for the use of valuable natural opportunities and they tend therefore to be overexploited with resultant waste, [and] in competitive digging of wells over a common pool of oil."

There is then a good case for inflicting on road-transport a charge equal to that which it would have to pay under a system of tolls exacted by a number of competing private owners. But in this ideal system, which is suggested as a standard of comparison, competition would have to be really perfect—that is to say, there would have to be a number of alternative routes between any two points: if each of our existing roads came into private hands, and the maximum revenue was secured to each individual owner by means of a toll, the price charged would exceed the value of the marginal product of road-space, and the number of vehicles would be depressed *below* the social optimum.

That is not all. The interests of the national dividend demand that each factor shall be paid a price which is equal to the value of its marginal product, not only in its actual occupation, but also, if it is on the margin of transfer, in its alternative occupation. That means that road-building should be carried to the point where it would not pay a private individual, relying on tolls to reimburse him, to build an additional road in competition with the existing roads.[2] If we take the present number of roads as given, there are doubtless too many motor-cars; but it seems quite likely that there are too few roads,[3] and it is even possible that, given the ideal number of roads, the ideal number of motor-cars would exceed the present number.

Practical considerations enforce the imposition of a uniform charge on motor-cars, without any regard to the economic value of the particular road service which each enjoys. Some compromise has to be sought between the rates of tax appropriate to different districts, and the congested roads will necessarily be more con-

[1] "The Doctrine of Comparative Costs," *Weltwirtschaftliches Archiv*, October 1932, p. 397, note.

[2] If the number of roads between any two points is not already large—it clearly is not—it will not be socially desirable to increase the number of roads right up to the point indicated by this condition.

[3] Even on the assumption, to which we are adhering throughout, that labour is fully employed.

gested than the social interests dictate, while the uncongested roads will be too uncongested. But the criterion for the desirability of building additional roads in congested districts becomes even more liberal than it was before: the fact that the full economic rent is not exacted for the use of roads in these districts means that it is desirable up to a point to build roads of which the cost actually exceeds the return that would be received if the full economic rent *were* exacted.

We have been basing our treatment on the assumption of a fixed supply of factors of production in terms of natural units. It remains to inquire whether the supply of factors, in so far as it is variable, will be such as to maximise economic welfare.[1] Equality between marginal disutility and earnings must, if earnings are less than marginal social productivity, mean that marginal disutility falls short of marginal social productivity. Thus if external economies are at all appreciable over the field of industry in general, it is socially desirable to stimulate the supply of factors of production.[2]

It need scarcely be remarked that the application of such a line of thought to the question of the supply of population is appropriate only if it is aggregate welfare, obtained by summing the individual welfares of all the members of society, and not average welfare per head, which it is thought desirable to maximise.[3]

III

At this point I intend to drop the assumption of perfect competition. It will simplify my treatment if I can now neglect the possibility of external economies and diseconomies, except for such external economies, associated with the existence of indivisible units, as may be said to take their origin in imperfection of competition itself. The failure of the pricing system is now to be ascribed to the divergence between price and marginal revenue to the individual firm: marginal cost is equal to marginal revenue, and not to price. To avoid undue complication, I shall disregard all elements of monopsony—that is to say, I shall assume that the factors of production are always purchased under conditions of perfect competition, though I shall no longer assume

[1] *Cf.* L. M. Fraser, *loc. cit.*, p. 51. [2] *Cf. Economics of Welfare*, p. 225.

[3] *Cf. ibid.*, p. 99, note: "A population, which, in given conditions, maximises this quantum [of happiness], seems to have a much better claim to be called the *optimum* population than a population which maximises *real income per head*."

that the finished product is sold under conditions of perfect competition. I shall assume, furthermore, that conditions of *simple monopoly* always prevail, *i.e.* that no firm discriminates by charging different prices for different portions of its output. It is well known that in certain cases discrimination will lead to a socially more desirable situation than that which is attained under conditions of simple monopoly, but this possibility will be referred to only by the way.

It is to be understood that the phrase *imperfection of competition* does not carry with it any of those implications with which by tradition the word *monopoly* is associated. I assume that any entrepreneur is free to enter that industry in which his earnings are highest, and there to maximise his earnings, and I shall not be discussing any types of interference which are called for by the breakdown of that assumption. Competition is imperfect if the price obtainable by an individual firm is not independent of its own output, or, in other words, if the demand for the individual firm is not perfectly elastic. The elasticity of demand for the individual firm can be employed as an inverse ordinal measure of the *degree* of imperfection of competition.

I shall also be assuming that the imperfection of competition is something which is inevitable, and cannot be reduced by means of interference. It is, however, obvious that in so far as the failure of *laissez-faire* is to be ascribed to ignorance and inertia on the part of consumers, the education of the consumer provides a more practicable means of advancing towards the ideal situation than the measures which are alluded to in the following pages.

It will be convenient to resort once again to the assumption that the supply of factors of production is completely inelastic in terms of natural units. This assumption will be abandoned in the final paragraph of the article.

The abandonment of the assumption of perfect competition does not entail any alteration in the condition for the maximisation of the national dividend. "The amount of a factor in any use will be *ideal* when the value of the marginal . . .[1] product of each marginal unit (unit situated on the margin of transfer) is the same in that use as in the alternative occupation," [2] the value of the marginal product being equal to the marginal physical product multiplied by the price of the commodity produced. But each factor now receives less than the value of its marginal physical product. Under conditions of *laissez-faire* each unit finds its way into that use where its *marginal productivity*, which

[1] The word "social" has now become otiose.

[2] P. 4 above.

is equal to its marginal physical product multiplied by marginal revenue to the firm that employs it, is a maximum : the margin of transfer consists of units for which marginal physical product multiplied by marginal revenue is the same in the two uses. It follows that the extent and direction in which the amount of a factor employed in any use differs from the ideal amount varies directly with the divergence between the fraction

$$\frac{\text{marginal revenue to the individual firm}}{\text{price}}$$

in the particular use and in the alternative use from which the factor has to be drawn. Now the fraction

$$\frac{\text{marginal revenue to the individual firm}}{\text{price}}$$

is equal to

$$\frac{\text{elasticity of demand for the individual firm } \textit{minus} \text{ one}}{\text{elasticity of demand for the individual firm}},$$

and the magnitude of the elasticity of demand is an inverse measure of the degree of imperfection of competition. We may conclude that it is socially desirable to expand those industries [1] in which competition is more imperfect than the industries with which they compete for their factors of production and to contract those in which the opposite condition prevails. The analogy with the type of interference which is called for by the existence of external economies is complete : the degree of imperfection of competition takes the place of the amount of external economies. Making the same assumption as we made above [2] in dealing with external economies—that each industry draws its factors of production from " industry in general "—and reserving the same rights of retranslation, we can evolve a similar scheme. All industries are to be arranged in descending order of degree of imperfection of competition. Then it is socially desirable to expand those industries which lie above the " average " industry and to contract those which lie below. It is not the absolute degree of imperfection of competition (of " monopoly ") but the deviation from the norm which determines the direction and magnitude of the devia-

[1] It is to be noted, as Mr. Kaldor has recently pointed out (*Economica*, August 1934, p. 339), that the use of the concept of an " industry " usually carries with it the highly implicit assumption that the demand for the product of each of the constituent firms is equally elastic. The unreality of this assumption is less apparent than the danger of overlooking its existence, and, for the sake of simplicity, I shall be assuming that over the field of any one industry competition is uniformly imperfect.

[2] See p. 6.

tion from ideal output.[1] If competition were everywhere equally imperfect there would be no case for interference. When Professor Pigou is discussing the effect of monopoly in causing output to deviate from the ideal,[2] he is conceiving of a degree of monopoly which exceeds the average. Or, rather, Professor Pigou's monopolies are rare phenomena in a world in which competition is generally perfect.[3]

At this point it becomes essential to consider the distinction between the hiring factor—the entrepreneur—and the hired factors of production. The marginal *private* physical product of an entrepreneur is a concept to which no meaning can be usefully attached. I shall speak of the *marginal physical product* of an entrepreneur in the sense of the physical increment of output which society obtains as a result of the application of an *additional* entrepreneur to a particular type of production, the natural units of all other factors employed by industry as a whole remaining the same as before. This marginal physical product of an entrepreneur, unlike the marginal private physical product (but like the marginal social physical product in the presence of external economies or diseconomies) of an ordinary hired factor, may be a hotch-potch, consisting of an increment of output in the one particular use and decrements of output in other uses, from which hired factors may be diverted to the new entrepreneur; so that in general an entrepreneur's marginal physical product is not capable of being measured. But the *value* of an entrepreneur's marginal physical product is expressed in terms of money. Two questions have now to be considered: first, the relation between an entrepreneur's wage and the value of his marginal physical product; and second, the relation between the value of his marginal physical product and his marginal social productivity, by which I mean the increment of economic welfare which results from the addition of one entrepreneur.

So long as competition is assumed to be perfect, the distinction between the entrepreneur and the hired factors of production, though it may be important, turns out to be irrelevant. For under conditions of universally perfect competition, the

[1] The same point of view has recently been put forward by Mr. Lerner, *Review of Economic Studies*, June 1934, p. 172, following Mrs. Robinson, *Economics of Imperfect Competition*, p. 310.

[2] *Economics of Welfare*, p. 270.

[3] His "archetypal industry," so far from depicting what "*would* be attained under conditions of simple competition" (*ibid.*, p. 213, note: my italics), must be regarded as *actually* "representative of industries in general" (*ibid.*, p. 213).

earnings of an entrepreneur in any occupation fall short of the value of his marginal physical product by the amount of the external economies to which he gives rise when he is placed in that occupation,[1] while it is clear that the value of his marginal physical product is equal to his marginal social productivity. Thus the scheme of ideas which applies to the hired factors of production is equally applicable to the entrepreneur.

When competition is imperfect, however, the distinction becomes fundamental.[2] As Mrs. Robinson has shown,[3] by just the amount by which the rewards of the hired factors fall short of the value of their marginal physical products the earnings of the entrepreneur exceed the value of *his* marginal physical product. In other words, the entrepreneur gets more than the value of his marginal physical product to the extent that competition is imperfect *in the uses from which he draws the hired factors of production*. It will be useful to distinguish two extreme cases, somewhere between which any actual case must lie.

On the one hand, we may suppose that each entrepreneur competes for his factors of production with other entrepreneurs in the same, or similar, industries, subject to the same degree of imperfection of competition as that to which he is himself subject. Then the excess of his earnings over the value of his marginal physical product depends on the imperfection of competition in the particular industry where he functions. This is likely to be the case in any industry for which the number of entrepreneurs in a given locality is fairly considerable.

At the other extreme we have the case where the additional entrepreneur draws his factors of production from industry in general. Then the excess of his earnings over the value of his marginal physical product depends on the imperfection of competition in industry in general. This is likely to be the case for a firm which operates in an area where there are no other firms producing the same type of product; but not invariably so—a newly-built railway may draw its personnel from the ranks of railway employees in other parts of the country rather than from

[1] See Joan Robinson, "Euler's Theorem and the Problem of Distribution," ECONOMIC JOURNAL, September 1934, pp. 409, 410. Mrs. Robinson confines her treatment to the entrepreneur's marginal physical product to the industry in which he is placed, but it is easily generalised so as to apply to his marginal physical product to society.

[2] Since I elaborated the basis of this article, Mr. Kaldor has made it clear (*loc. cit.*, p. 337, and especially p. 338, note 2) that he is working on very similar lines.

[3] *Loc. cit.*, p. 413.

the local population. In the special case where competition in industry in general is perfect, an entrepreneur who draws his factors from industry in general receives the value of his marginal product, and no more, no matter how imperfect by way of exception is the competition which prevails in his own particular industry.[1]

It remains to consider the relation between the value of an entrepreneur's marginal physical product and his marginal social productivity—his contribution to the national dividend. In the case of the hired factors of production there is no question to discuss. For an addition of one unit of a hired factor involves an addition equal in amount to the factor's marginal physical product to the output of a particular firm. The increment to the firm's output is in all respects indistinguishable from the output that was already being produced. The marginal utility of this output is measured by its price; and it follows that the marginal social productivity of the factor is equal to the value of its marginal physical product. But the setting-up of an additional firm may involve the production of what is to all intents and purposes a new commodity, differing from anything that was already being produced.[2] Several cases must be distinguished. If the new firm is set up in an industry in which competition is perfect, and remains perfect, no problem arises: its output takes the form of a pre-existing commodity. The same is true if imperfection of competition is due purely to oligopoly, the market being perfect but the number of firms being small. The marginal social productivity of the entrepreneur is in these two cases still equal to the value of his marginal physical product. It is when we come to imperfection of the market that the difficulty begins. The cheese manufactured by one firm now differs from other kinds of cheese. The question before us is whether this difference is the same in kind, though not perhaps in degree, as the difference between cheese and chalk. It is necessary to distinguish between two extreme types of market imperfection,[3] the purely *rational*

[1] Mrs. Robinson's treatment is based on the tacit assumption that each entrepreneur competes for his factors with *similar* entrepreneurs. It is unfortunate that as an example of Wicksteed's perception of "the fact that under imperfect competition the entrepreneurs receive more than their marginal physical productivity," she refers to his instance of "a great monopoly or trust" (*loc. cit.*, p. 414); for it is *par excellence* the type of entrepreneur which is to be found in a so-called "monopoly or trust" who must draw his factor of production from industry in general, and who therefore receives no more than the value of his marginal physical product if competition is, generally speaking, perfect (and actually receives less, as will be seen in a moment—p. 27, below—than his marginal social productivity).

[2] Cf. A. P. Lerner, *loc. cit.*, p. 167.

[3] See E. A. G. Robinson, *op. cit.*, p. 173.

and the purely *irrational.* In actual practice we usually find a mixture of the two, and the determination of the composition of the mixture is often a matter for somewhat arbitrary assessment.

The imperfection of the market is purely *irrational* if it takes its origin in preferences which obtain no justification, when they are satisfied, in actual enjoyment, and the thwarting of which causes no loss of satisfaction. "It may take thousands of acres of paper, or a prolonged and considerable difference of price, to penetrate my consciousness and teach the old parrot a new cry. But once I have learned it, I am as likely to be better off as worse."[1] Irrationality of imperfection is to be detected by imagining that each consumer in turn is forcibly removed from the firm with which he is accustomed to deal to some other firm which meets the same want at a cost which, according to the general consensus of the market, is the same as that incurred hitherto. The imperfection is irrational to the extent that the consumer suffers no loss of satisfaction as a consequence of such diversion, and experiences the same degree of preference for the product of the new firm to that of other firms as he formerly did for the product of the old firm. Preferences which are the result of ignorance or inertia are almost entirely irrational, though the momentary inconvenience and discomfort, which a change of custom inevitably involves, entails an element of rationality, of which the magnitude is the smaller the lower the rate at which the future should be discounted from the point of view of society. Where habit, and still more tradition, form the basis of imperfection, the element of rationality must be regarded as more considerable. The resistance to change may persist for some considerable time after a change has occurred. The extent to which the imperfection is irrational depends on the length of this time-lag and on the rate at which the future should be discounted.

Where the imperfection of the market is purely irrational the product of an additional firm represents nothing more than an addition to the output of a definite "commodity." The increment of utility afforded to society is equal to this commodity's marginal utility, measured by its price, for each extra unit produced. The marginal social productivity of the entrepreneur is then equal to the value of his marginal physical product, just as in the case of perfect competition and of oligopoly in a perfect market.

Imperfection of the market is purely *rational* if it takes its basis in preferences which correspond to real satisfactions. In so

[1] E. A. G. Robinson, *loc. cit.*

far as the forcible transfer of a consumer from one firm to another has no effect on his scale of preferences for the products of the different firms, the imperfection may be said to be rational. In such a case "there is an adequate economic justification for the preference shown by the consumer, and his custom can only be transferred to a less convenient producer or shop at a loss to himself." [1] The most obvious example of rational imperfection of competition is that provided by what is ordinarily called a "monopoly," where the whole of the production of a "commodity" is in the hands of a single entrepreneur, though even here Marshall's distinction [2] between long- and short-period elasticity of demand reminds us, that "as if increase of appetite had grown by what it fed on," an element of irrationality is often present. Where the market is imperfect as a result of the cost of transport the imperfection is purely rational. But even where the imperfection is due to customers' preferences a considerable element of rationality is often present. The fact of idiosyncrasy need not be stigmatised as irrational provided that it has some permanent foundation which will survive a transfer of custom. The distinction between rational and irrational preferences does not commit us to any view as to the desirability of "bullying the consumer." If we like to go behind the consumer's back and decide for him, rather than allow him to decide for himself the value to be ascribed to his individual tastes, we may, if we so care, classify as irrational the greater part, or all, of his preferences. But nothing in this article need drive us to such ruthless resorts. It is doubtless true that "it is the contrary English customer who has done most to make the contrary English firm," [3] but we are free to ascribe to contrariness all the virtue that may be its due.[4] We may leave the consumer to decide for himself, regarding as irrational only those preferences which investigation would prove to be ephemeral. But it is sufficiently clear that not even so liberal an attitude will leave us with a very considerable element of rationality—apart, as has been said, from the preferences between what are commonly called "commodities" and the preferences which are associated with costs of transport.

Where imperfection of competition is at all rational, an ad-

[1] E. A. G. Robinson, *loc. cit.*

[2] *Principles*, p. 110.

[3] E. A. G. Robinson, *op. cit.*, p. 176.

[4] The somewhat arbitrary nature of the distinction between rational and irrational imperfection is associated with an arbitrary element in the measurement of the national dividend; *cf. Economics of Welfare*, p. 69: "So far . . . as 'new commodities' are introduced between two periods which are being compared, the measures [of the national dividend] are imperfect."

ditional entrepreneur is doing more than merely add a certain physical increment to a pre-existing flow of a commodity. He is satisfying certain preferences which were previously being thwarted. His marginal social productivity exceeds the value of his marginal physical product. If the imperfection is purely rational his marginal social productivity is equal to his firm's physical output multiplied by its *average* utility *minus* the loss of utility occasioned elsewhere by the diversion of the hired factors to his employment. It follows at once that his marginal social productivity exceeds the value of his marginal physical product by the excess of the average utility of his output over its price (or marginal utility), multiplied by the amount of his output.[1] In other words, where imperfection of competition is purely rational an entrepreneur's marginal social productivity exceeds the value of his marginal physical product by the additional revenue which he could earn by selling his output under conditions of perfectly discriminatory, instead of simple, monopoly.

A synthesis is now possible. Any given entrepreneur is typified by two parameters—his type is determined, as it were, by a point on a two-dimensional diagram. The one parameter depends on the extent to which the entrepreneur competes for his factors with similar entrepreneurs, working under the same degree of imperfection of competition as he is himself, and on the extent, on the other hand, to which he competes for his factors with "industry in general." The other parameter depends on the extent to which the imperfection of competition to which he is subject is rational and on the extent to which it is irrational. We have so far dealt with the two extreme values of each of these two parameters considered separately. Of these extremes the possible number of combinations is four. We shall now deal in turn with each of these four combinations. We shall thus have dealt with the four extreme points that determine the rectangle within which the type of any entrepreneur can be denoted. It will be sufficient to deal with these four extreme cases. Any intermediate case can easily be fitted into the scheme.

It is to be remembered that the changes that are to be rung refer only to the distribution as between one use and another of entrepreneurs. The question of the distribution of the hired factors has already been discussed, and what was said above still stands: the national dividend can be raised above the level attained under conditions of *laissez-faire* by diverting the hired factors of pro-

[1] *I.e.* by the consumers' surplus afforded by his firm's output.

duction away from those uses where the imperfection of competition falls short of the average and by attracting them into those uses where the imperfection of competition exceeds the average.

We may begin with the extreme in which each entrepreneur in the particular industry competes for his factors of production with the other entrepreneurs in the same industry and where the imperfection of competition is wholly irrational. Then the reward of the entrepreneur exceeds the value of his marginal physical product by an amount varying with the degree of imperfection of competition in that industry, and the value of his marginal physical product is identical with his marginal social productivity. Each entrepreneur will enter the industry in which his reward is highest, but his marginal social productivity falls short of his reward by an amount varying with the imperfection of competition. It follows that the national dividend can be increased by diverting entrepreneurs away from any industry in which the imperfection of competition exceeds the average and by attracting them into any industry in which the imperfection of competition falls short of the average. In fact, the treatment which should be applied to entrepreneurs is precisely the opposite to that which is appropriate to the hired factors. Thus taking retail selling as an example of an industry in which competition is exceptionally imperfect, we may conclude that, just as it is desirable to increase the amount of hired factors engaged in retail selling, so it is desirable to diminish the number of shops. Either change by itself is calculated to increase the national dividend : [1] in the one case the total output of the service of retail selling will be increased, in the other case it will be diminished.[2] But most desirable of all is to effect both changes in such a way as to attain a larger aggregate of output from a larger aggregate of hired factors and

[1] It should again be emphasised that I am discussing only the aggregate of the national dividend, and not its distribution. A reduction in the number of retail shops, brought about by some kind of interference, is very likely to lead to a rise in retail prices. The surviving shopkeepers will then obtain a disproportionate share of the increase in the nation's income—in fact, it is quite possible that they will obtain the whole of the increase and a good bit more besides. Such distributional questions lie outside the bounds of this discussion. It may, however, be pointed out that if the restriction on the number of shopkeepers is brought about by some system of taxation, and not by a system, say, of licences, and the proceeds of the taxation are available to the nation as a whole, these anomalies will be less significant.

[2] On the assumption that the value of the marginal physical product of a marginal shopkeeper is not negative—as it may well be (see p. 32 below).

a smaller aggregate of entrepreneurs. The ideal situation of an industry is attained when its size and organisation are exactly such as would prevail if it were subject under conditions of *laissez-faire* to that degree of imperfection of competition which exists on the average over industry as a whole.

While it is desirable in the case of industries in which competition is *abnormally* imperfect to increase the size of the firm—to raise it closer to the optimum—for industries in which competition is *subnormally* imperfect, the opposite procedure is called for. Too large an output is here produced by too few firms in the absence of interference, and it is socially desirable to have more firms, each producing on a smaller scale. "To reproduce the conditions of perfect competition" is not the correct battle-cry for this type of "rationalisation," unless perfect competition is the rule over the main part of the field of industry.

The reproduction of the conditions of the average degree of imperfection of competition is what is required. This can be attained by a very simple device. The amount of hired factors in any industry can be regulated by means of a subsidy (or tax). The number of entrepreneurs can be regulated by means of a lump-sum tax (or subsidy), levied on (or paid to) each entrepreneur. If each type of regulation is carried to the ideal point the lump-sum tax (or subsidy) allocated to every entrepreneur will be exactly equal in amount to the total subsidy (or tax) allocated to the factors of production which he employs. For the output of the industry, and therefore the price, and therefore the average cost, are to be the same as they would be if the average degree of imperfection prevailed. But the industry is to be a facsimile of what it would be if the average degree of imperfection of competition prevailed. Thus the actual cost incurred, after allowing for the subsidy and tax, must be equal to the cost exclusive of any subsidy and tax. It follows that the subsidy must exactly pay for the tax. Each industry can be treated as a water-tight compartment, and there need in this case be no question of taxing one industry for the benefit of another.

This simple result requires some qualification. It is easy to see that :—

An entrepreneur's marginal social productivity = his earnings

$$- \frac{\text{cost of hired factors}}{e - 1},$$

where e is in some sense the average elasticity of demand

for the individual firms in the particular industry.[1] Thus the divergence between an entrepreneur's marginal social productivity and his earnings depends not only on the degree of imperfection of competition but also on the magnitude of the firm's aggregate costs (exclusive of profits), or, as we may put it, on the size of the firm. Now the size of a firm depends on two sets of factors:—(*a*) it depends on the technical conditions of production, as expressed by its cost curve; and (*b*) it depends on the degree of imperfection of competition, as expressed by the demand curve for its product. So far as variations in the size of firms are due to variations in the imperfection of competition, we have already dealt with the case for interference which they set up; for the operation of reproducing the conditions of the average degree of imperfection brings the firms to the scale at which they would operate in the face of the average degree of imperfection. There remain such variations in the size of firms which are due, not to differences in the sizes of their individual markets, but to differences in the technical conditions of production—*natural* differences, as we may call them. The above equation makes it clear that the type of diversion which is called for where firms are naturally large is the same in direction as that which is called for where the imperfection of competition is great. That is to say, in addition to, and on top of, the type of diversion which has so far been considered, it is socially desirable to divert entrepreneurs from industries in which the firms are naturally larger than the average for industry as a whole, and to attract them into industries where the firms are naturally below the average in size. Where the firms are already naturally large under conditions of *laissez-faire* it is in the interests of society that they should be yet larger; where they are already naturally small it is in the interests of society that they should be yet smaller. This type of diversion would be called for even though competition were equally imperfect in all industries (and it would then be the only type that was called for). The extent to which it is most desirable to carry it is the smaller the less imperfect is competition: under conditions of universally perfect competition

[1] Imagine the entrepreneur to be taken away, the factors which he was hiring being diverted to other firms. The value of the increase in output of these other firms is equal to the cost of the hired factors multiplied by $\frac{e}{e-1}$ $\left(\text{since } \frac{e}{e-1} = \frac{\text{price}}{\text{marginal revenue}}\right)$.

Hence the entrepreneur's marginal social productivity = value of his output $- \frac{e}{e-1}$ (cost of hired factors) = his earnings $- \frac{\text{cost of hired factors}}{e-1}$.

it ceases, of course, to be desirable, the denominator of the last term in the above equation then being equal to infinity.

All this has a simple interpretation in terms of common sense. Imperfection of competition implies the existence of internal economies. Now internal economies, no less than the external economies considered in the earlier portion of this article, provide a basis for interference. If the internal economies are everywhere equal, no diversion is called for. It is when the degree of internal economy is different in different uses that a diversion of factors of production is calculated to increase the national dividend. The internal economies are greatest where the firms are naturally the largest, and it is therefore socially desirable to make naturally large firms still larger at the expense of reducing yet further the size of the naturally small firms. This would be the only type of diversion that would be called for if competition were everywhere equally imperfect. But where competition is abnormally imperfect, the firms are abnormally below their optimum in size and the internal economies are abnormally great. It is therefore desirable to increase the size of such firms at the expense of reducing the size of those firms which are faced with a less than average degree of imperfection of competition.

We may now turn to the extreme case where, the imperfection of competition being still wholly irrational, each entrepreneur competes for his factors of production with industry in general. We can still write :—

An entrepreneur's marginal social productivity = his earnings

$$- \frac{\text{cost of hired factors}}{e - 1},$$

but e is now the average elasticity of demand for the individual firms taken over industry as a whole. Since e is now the same in all uses the last term in this equation can only differ as between uses in which the size of the firm, as measured by aggregate cost (excluding profits), is different. Once again it is socially desirable to divert entrepreneurs from uses where the firms are large to uses where the firms are small—to make large firms larger and small firms smaller. This time the proposition is of general application : it is not only the firms which are *naturally* small that it is socially desirable to render still smaller, but equally the firms which are small because their individual markets are so limited ; and similarly for the large firms. It has, however, to be remembered that if competition is not uniformly imperfect everywhere, the

diversion of entrepreneurs is not the only kind of diversion which the social interest calls for. The diversion of the hired factors from points where competition is less imperfect to points where competition is more imperfect is calculated, taken by itself, to render small firms larger and large firms smaller. The simultaneous practice of both types of diversion will result in a shift of entrepreneurs in the same directions as the hired factors, and it seems impossible to lay down any general principle as to the effect on the size of the firms.

Up to this point it has been tacitly assumed that the entrepreneur is always capable of making a positive contribution to society's welfare, so that it is merely a question of where each entrepreneur may most advantageously be placed. There remains the possibility that society would be better off if some entrepreneurs were prevented from supplying it with their services, *i.e.* if the total number of firms were forcibly curtailed. So long as competition is everywhere perfect, each entrepreneur's marginal social productivity is equal to his earnings. Provided that entrepreneurs can be relied on to refuse to work for a negative return, we can rest assured that this marginal social productivity under conditions of perfect competition will be positive. But if competition is sufficiently imperfect, the imperfection being of the irrational type, then, as the above equation indicates, an entrepreneur's marginal social productivity may be negative even though his earnings are positive. In such a case society would be better off without him, reaping a net gain by concentrating the factors which he has been hiring on to the other firms. The criterion for such redundancy is a simple one. If the firms in a particular industry are producing under conditions of falling average cost of hired factors (falling average cost excluding profits)—if, that is to say, an increase in the size of any one firm would be attended by actual *technical* economies,—then the value of each entrepreneur's marginal physical product, and therefore his marginal social productivity, is negative. For if the average cost of the hired factors is falling for each firm, the sum obtained by aggregating for the firm the product of the amount of each hired factor by the value of its marginal physical product exceeds the value of output. But, since we are assuming that there are no external economies or diseconomies, the sum obtained by aggregating for the industry the product of the amount of each factor, *including the entrepreneur*, by the value of its marginal physical product *is equal* to the value of output. Hence the value

of the marginal physical product of the entrepreneurs is negative if the average cost of the hired factors is falling for each firm. Where this condition holds there are too many firms from the point of view of society, and production is unnecessarily inefficient. When the number of firms have been reduced to the ideal quantity, the internal economies will be due entirely to the spreading of the entrepreneur's profit over a larger output.

If the entrepreneur is capable of serving society in some alternative capacity, *e.g.* as a salaried official, the criterion for redundancy is correspondingly more stringent. An entrepreneur will be better employed in some other rôle if the value of his marginal physical product as an entrepreneur, though positive, is less than the value of his marginal physical product in the alternative occupation. Firms may thus be socially redundant even though they are of such a size that the technical economies of large scale have already been exhausted.

There remain the two extreme cases of purely rational imperfection. Our formula now becomes :—

$$\text{An entrepreneur's marginal social productivity} = \text{his earnings} - \frac{\text{cost of hired factors}}{e-1} + \text{addition to revenue caused by perfect discrimination,}[1]$$

where e is the average elasticity of demand for the individual firms with which he competes for his factors of production. In the special case where $e = \infty$, the second term on the right-hand side vanishes, and we have the well-known rule that an entrepreneur's marginal social productivity is in a world of perfect competition measured by the total profit which he could obtain if he were discriminating perfectly. A railway (provided that its clients' preferences for it are purely rational) is socially desirable so long as it *could* by discriminating perfectly cover its costs,[2] no matter whether in fact it discriminates or not.

To the extent that the railway draws its factors of production from firms for which competition is imperfect, the strength of the social case for its existence is weakened. It is easy to see that in practice the magnitude of the second term on the right-hand side of the above equation will often be very considerable.

[1] It is the addition to revenue which would be obtained by discriminating perfectly in selling the same output as is actually being sold, not the output which *would* be sold if the firm *were* practising perfect discrimination.

[2] Furthermore, the output which it *would* produce if it *were* discriminating perfectly is its ideal output.

Thus if we equate e to 2—by no means an absurdly low figure for, say, a railway company which draws most of its labour from other railway companies located in other parts of the country,—the marginal social productivity is equal to the total profit which would be obtained if the firm were selling its output under perfect discrimination, *minus* the cost of the hired factors. Thus the possibility of a negative marginal social productivity, though far more remote than in the case of irrational preferences, cannot be entirely ignored. In this connection it is to be noted that a high degree of imperfection of competition, while raising the value of the second term on the right-hand side of the above equation, also raises the value of the third term. It can, in fact, be demonstrated that it is very unlikely that a firm earning a positive profit will have a negative marginal social productivity in that extreme case of rational imperfection in which each firm competes for its factors of production with similar firms, subject to the same degree of imperfection of competition as that under which it sells its own output. In the opposite extreme case, in which each firm competes for its factors with industry in general, the possibility of social redundancy is somewhat more extended. If we suppose that in industry in general competition is rather imperfect, so that $e - 1$ is small and the second term is therefore large, while the particular firm produces under conditions of fairly perfect competition, so that the third term is small, the marginal social productivity may be negative even though the firm is earning a positive return. In such a case the existence of the firm involves a sacrifice of internal economies elsewhere which fails to be offset by the somewhat meagre consumers' surplus which its own particular product provides. On the view that competition in industry in general is fairly perfect, such a case is very unlikely to arise.

Returning to the assumption that all entrepreneurs are socially useful—an assumption which we see to be far more plausible in the case of rational than of irrational imperfections, we may now briefly consider the optimum arrangement of entrepreneurs when imperfection is purely rational. We begin with the extreme case in which each entrepreneur competes for his factors of production with similar entrepreneurs. It would then appear to be probable, but by no means certain, that the excess of an entrepreneur's marginal social productivity over his earnings will be greatest where competition is most imperfect. The gain in respect to consumers' surplus will usually outweigh the loss in respect to exploitation, and it is therefore socially desirable to divert

entrepreneurs from those industries in which competition is subnormally imperfect into those industries in which competition is abnormally imperfect, *i.e.* once again to shift entrepreneurs in the same direction as it is socially desirable to shift the hired factors.

For the other extreme case, in which each entrepreneur competes for his factors with industry in general, the same conclusion holds good with far greater force. The exploitation factor, as measured inversely by e, is now a constant, and we are simply left with the obvious desirability of diverting entrepreneurs into those fields where the consumers' surpluses provided by the individual firms are great.

Once again it is necessary to dispense with the assumption that the factors of production are in completely inelastic supply in terms of natural units. The effect of imperfection of competition is to depress the earnings of any hired factor below its marginal social productivity. Thus the supply of natural units will in general be less under conditions of *laissez-faire* than is calculated to maximise economic welfare, and some method of stimulating the supply is socially desirable. But any kind of natural unit from which to a preponderating extent the entrepreneur ranks are recruited will, if imperfection is on the whole irrational rather than rational, be supplied under conditions of *laissez-faire* on a scale which exceeds the social optimum.

R. F. KAHN

King's College,
Cambridge.

THE MONETARY DOCTRINES OF PROFESSOR DAVIDSON

THE barrier of language tends to make the flow of ideas as between large and small countries a one-sided affair. Economists in a small country must necessarily be linguists; and before they embark on original work they have usually mastered the recognised classics. But, unfortunately, it is often only after a long time-lag that their important contributions receive due recognition in the outside world. During the last forty years Sweden has maintained a level of scholarship in economic science which compares favourably with that of any other country. Wicksell and Cassel are recognised as being among the outstanding economists of the last generation; and since the War the tradition has been worthily upheld by the younger school. There is, however, another name intimately associated with the development of economic thought in Sweden. Professor David Davidson, who held the chair at Uppsala in the years 1890–1919, deserves to be regarded as one of the builders of Sweden's solid reputation. He founded the Swedish journal *Ekonomisk Tidskrift* in 1899 and still remains its editor. This journal contains a very large part of Davidson's published work; and it has always been distinguished by the high quality of its articles. Last year Professor Davidson celebrated the eightieth anniversary of his birthday; and this is a fitting occasion to attempt to assess the part he has played in the evolution of monetary theory in Sweden.[1]

Before 1890 Davidson had published three theoretical works,[2] viz. an essay on the Laws governing Capital Accumulation (1878), a critical History of the Theory of Rent (1880) and An Inquiry into the Taxation of Income (1889). Special interest attaches to his first essay, for it contains in embryo more than one of the ideas which were later to be worked out in great detail by Böhm-Bawerk. One example is his acute criticism of the " use " theory

[1] Besides his work on monetary theory, Davidson has made important contributions to the study of the theory and practice of tax legislation, and to economic history, particularly the standard work on the History of the Bank of Sweden.

[2] *Bidrag till läran om de ekonomiska lagarna för kapitalbildningen* (1878); *Bidrag till jordränteteoriens historia* (1880); *Om beskattningsnormen vid inkomstskatten* (1889).

of capital associated with Hermann and Knies.[1] Moreover, he sees the significance of the "investment period." Adopting Menger's terminology he points out that, when goods "of the first order" are transformed into goods "'of a higher order,' assuming the period of time during which these goods are bound up in production stretches beyond the length of the existing production period, . . . the production value (productivity) of the goods can under certain circumstances be higher than it would be if no capital accumulation had taken place."[2] As early as 1878 Davidson seems to have had a glimpse of some of the essentials of the modern theory of capital and his essay deserves a place of honour in the history of this branch of economic thought.

1. *Criticism of the Wicksellian Theory.*

The publication of Wicksell's *Geldzins und Güterpreise* in 1898 is rightly regarded as an important landmark. The theory regarding the connection between the money rate of interest, the natural rate and the price level has exercised a dominating influence on present-day monetary and trade cycle theory. Davidson reviewed the book in 1899[3] and hinted that there was a weakness in Wicksell's fundamental thesis. The argument in *Geldzins* was that the value of money would remain constant, that is, the general level of prices would be stable, as long as the loan rate of interest was normal, that is, equal to the natural rate. Davidson was led to attack this conclusion by considering the effects of changes in productivity on the relative position of lenders and borrowers. He asserted that if, for example, productivity were to increase by 25 per cent. and the price level were kept constant, money incomes such as wages and profits would rise by 25 per cent., but incomes fixed in terms of money would be of the same value in terms of commodities as they had been before the rise in productivity. Lenders would therefore not get a share in the increase of wealth. In view of such social injustice he denied that it was "desirable" to keep the price level stable.

Though strongly tinged with ethical considerations, this initial broadside had already hit the mark. The attack was elaborated in 1906 and 1909 in two articles entitled "The Concept of the Value

[1] *Bidrag till läran om de ekonomiska lagarna för kapitalbildningen*, pp. 38–44.

[2] *Ibid.*, pp. 55–6. These ideas were more fully worked out in a subsequent essay entitled "Några teoretiska frågor" (*Ekonomisk Tidskrift*, 1919, pp. 231–59), in which, *inter alia*, he shows the importance for trade cycle theory of the lengthening and shortening of the average period of production (pp. 253–4).

[3] *Ekonomisk Tidskrift*, 1899, pp. 233–40.

of Money" and "The Stabilisation of the Value of Money." [1] In the former he summarised his observations as follows :—"All changes in the general level of prices do not constitute changes in the value of money. When productivity increases, the requirement that the value of money should remain stable demands that prices should fall : when the production of goods increases without a rise in productivity, the same requirement demands that the price level should remain stable. . . . An increase in production may be the reflection both of the increase of population and capital and of a rise in productivity; and the necessity of keeping these two sets of factors apart renders the task of monetary management very difficult. That management cannot be carried out with as simple an apparatus as Wicksell contemplates." [2]

As against Wicksell's statement that changes in productivity were usually too small to make much difference, Davidson made the somewhat prophetic reply that monetary management had to reckon with the increases in productivity likely to occur in the future.[3] He mentioned in particular the transformation to be expected in agriculture, a branch of production hitherto hardly touched by technical progress. Leaving aside the familiar point regarding the lender–debtor nexus, he summed up his position by taking Wicksell on his own ground.[4] He submitted that, since an increase in productivity enhances the prospect of profit as long as prices are unchanged, the natural rate becomes too high in relation to the money rate. This can only be corrected in one of two ways : either the money rate must be raised or the natural rate lowered. If prices fall of themselves the natural rate will immediately decline and equilibrium will be restored. If the money rate is put up, there will be a fall in prices according to Wicksell's theory. In the one case the money rate should remain unchanged, and in the other it should be raised. In neither case should the money rate be reduced. Thus, by taking Wicksell's theory as his starting-point, he claimed that the practical conclusion that the price level should be kept stable was erroneous.

It is of interest to note Wicksell's defence of his theory. In an article entitled "The Money Rate of Interest and Commodity Prices" [5] (1909), he begins by expressing his fear that the readers of the Journal were getting tired of the abstruse theoretical

[1] "Något om begreppet penningens värde," *E. T.*, 1906, pp. 460–8, and "Om stabiliseringen av penningens värde," *E. T.*, 1909, p. 1.

[2] *E. T.*, 1906, pp. 467–8. [3] *Ibid.*, 1909, p. 20. [4] *Loc. cit.*, pp. 22 ff.

[5] "Penningränta och varupris," *E. T.*, 1909, pp. 61–6; also *Vorlesungen*, Vol. II. p. 227.

discussion. To clarify his position he distinguishes between two different cases.

(1) Assuming the quantity of money to be unchanged, a rise in productivity in itself would tend to depress prices. But the increase in the output of commodities resulting from higher productivity will only come about *in the future*, whereas the new chances of profit *immediately* lead to a greater demand for raw materials and labour (and possibly luxury and other consumption goods as well). Therefore, if the money rate is not raised, there will be a rise in the price level from the very beginning. The banks should accordingly raise their loan rate, thereby restraining enterprise and encouraging saving. He regards this case as being of most practical interest, for there is generally a time interval between the acquisition of more productive instruments of production and the expansion in the output of final commodities.

(2) The other case involves an improvement in productivity which is *immediately* accompanied by an increase in the output of commodities. A fall in the price level is here to be expected; but it will be small and non-cumulative. However, there will be a simultaneous and stronger force in the form of a discrepancy between the money and the natural rates which will tend to raise the price level. "The initial fall in the price level resembles the backward step which a gymnast takes before he leaps forward." He denies the validity of Davidson's assertion that the fall in the price level brings the natural rate down to the level of the money rate so that a new equilibrium is established. If this were true he would regard it as a serious blow to his theory. Wicksell maintains that Davidson's thesis rests on the tacit assumption that real capital increases in the same proportion as productivity. When the price level falls in the first instance, unchanged money wages mean a rise in real wages; but a rise in real wages is only possible if there is an increase in real capital. The Wicksellian theory, however, postulates no change in real capital and real wages. When prices have fallen, money wages also move downwards; consequently, "increased productivity with constant real capital necessarily implies a rise in the real rate of interest, and equilibrium can never be maintained unless the money rate is raised to equality with the real rate." [1] The question as to what the banks should do in the face of the initial fall in the price level is, thus, quite unimportant, because forces are at work which must send prices soaring unless the banks interfere at an early stage in the process.

[1] *Loc. cit.*, p. 66.

Davidson refrained from continuing the discussion, in deference to Wicksell's impression (with which he did not quite agree) that the readers were becoming weary of the controversy.[1] Wicksell had denied that a rise in productivity could lead to a permanent fall in prices with money wages remaining unaltered. If such circumstances materialised, the Wicksellian precept would decree a lowering of the money rate; and that could not fail to inaugurate an inflation.

There can be little doubt that the honours in this contest went to Davidson, and perhaps Wicksell's sudden display of indulgence towards the readers of *Ekonomisk Tidskrift* was his way of throwing in the towel. It is clear from Wicksell's defence that his fundamental proposition holds good only within the strict confines of a stationary state.[2] Under less abstract assumptions it is open to objection. Davidson had revealed a serious theoretical weakness in the position of the "stabilisation" school. The arguments he used in 1906 and 1909 have a direct bearing on the consequences of the policy of the American banking system in the 1927–29 boom. In certain major respects he foreshadowed recent criticism of the Wicksellian theory.[3] He had already begun the task of destroying what Dr. Hayek calls "the obsession that the only aim of monetary theory is to explain those phenomena which cause the value of money to alter."[4, 5]

[1] "Replik," *E. T.*, 1909, pp. 67–8.

[2] It is necessary to point out that Wicksell was not thinking of the "Konjunktur" problem when he introduced his concepts of money and natural rates. He makes a point of this in defending himself against a criticism by Brock. *E. T.*, 1909, p. 61. In their controversy both Wicksell and Davidson were thinking of long-period changes in the price level such as occurred in 1873–96. This is also clear from the inductive examples which Wicksell used in *Geldzins und Güterpreise*.

[3] J. G. Koopmans overlooked Davidson's work when he stated that in the period 1898–1918 only Altmann and Mises had occupied themselves with Wicksell's doctrine, "Zum Problem des 'neutralen' Geldes," *Beiträge zur Geldtheorie*, p. 225, footnote 3.

[4] *Monetary Theory and the Trade Cycle*, pp. 114–15.

[5] The plan for stabilising the dollar which Irving Fisher first advanced in 1911 was acutely criticised by Davidson in an article published in 1913 ("Irving Fishers förslag att reglera penningens köpkraft," *E. T.*, 1913, pp. 87–107). Wicksell's treatment of the Fisher plan (see *Vorlesungen*, Vol. II. pp. 256–8) was originally inspired by Davidson's attack, as he admitted in the following words:—"It is far from my intention to go out of my way to criticise Fisher's Plan, for I have regarded it with a great deal of sympathy from the beginning. In fact, a few months ago I sent him an article for publication, expressing almost unqualified agreement. It was only when I read Professor Davidson's article that I came across what I now realise to be the fundamental flaw in his proposal" ("Anmärkningar till Doctor Brocks uppsats," *E. T.*, 1913, p. 261).

2. *The Application of Theory to War-time Problems.*

The new problems created for Sweden by the War breathed new life into the dry bones of academic controversy. The practitioners of economic science did not seek to escape their responsibilities; and their voices were clearly heard, though they were not always in harmony. The Governor of the Riksbank was left in no doubt as to the views of Wicksell, Cassel, Davidson and Heckscher; and he did his best to defend himself in the pages of the *Ekonomisk Tidskrift*.[1] Those sceptics who despair of the practical utility of economists would do well to study the impact of theory on practice in Sweden from 1915 to the present day. Davidson's advice was sought on more than one occasion by the Government and the Riksbank.

On August 2, 1914, Sweden suspended the convertibility of its notes. After the initial shock of the War there was a considerable inflow of gold from belligerent countries. The Bank adhered to its legal reserve ratio and pursued a restrictive discount policy,[2] but the imports of gold continued.

Davidson pointed out in an article at the end of 1915 that in the circumstances Sweden could do nothing but keep the value of its currency on a level with gold;[3] but this meant joining in the general inflation. He hinted that it would be quite otherwise if the authorities abolished the obligation of the Bank to buy gold at a fixed price. This was the immediate origin of the well-known Gold Exclusion policy. Early in 1916, Moll, the Governor of the Riksbank, communicated privately with the three leading economists, Wicksell, Davidson and Cassel, asking them for their considered opinion on such a step.[4] The replies were favourable; and the experiment came into operation in February 1916. The Swedish currency became free to appreciate but could not sink lower than the value of gold, since notes were still to be redeemable in gold. The economists anticipated that it would be possible to raise the value of the krona above that of other depreciated currencies. They were to be disappointed, because the Central Bank seems to have been quite indifferent to the aims of the theorists. Gold exclusion should have been accompanied by a more restrictive discount policy and a serious attempt to curtail

[1] See V. Moll, "Växelkurs och bankränta," *E. T.* 1915 and "Riksbankenloch dyrtiden," *E. T.*, 1917.

[2] See A. Wennerberg, "Sveriges Riksbank och dess diskontopolitik under och efter Världskriget," *E. T.*, 1924, p. 226.

[3] "Till frågan om penningens värde under kriget," *E. T.*, 1915, pp. 415–23.

[4] See G. Cassel, *Money and Foreign Exchange after 1914* (1922), pp. 79–100.

foreign lending. Moreover, the terms of the Scandinavian Union enabled Denmark and Norway to export gold coin into Sweden and thus nullify the policy. It was, however, an interesting case of an attempt to implement an idea which was only known to a few theorists on the eve of the War.[1]

It was only after the three Scandinavian Governments had agreed in April 1917 to enforce a rigid prohibition of gold exports that the gold exclusion policy could be given a fair chance. But internal inflation still took place. Capital was so scarce in the belligerent countries that there was a substantial margin between the " natural " rate of interest in those countries and in Sweden. Foreign lending was thus proceeding on a large scale. Obstacles were being placed in the way of Swedish imports; but the demand for her exports was practically insatiable.[2] Davidson pointed out that the maintenance of a " normal " rate of interest within Sweden could do nothing to impede foreign credits. Sweden would still lose capital and the Riksbank would afterwards find it necessary to raise its loan rate in order to keep it normal. To raise the rate well above normal would not be advisable in view of the progressive increase in the demand for capital abroad. Banking policy in these circumstances must therefore be accompanied by special measures directed against foreign lending.[3] Davidson prepared a plan for the attainment of this object; but it was never published.[4]

In June 1918 the Minister of Finance appointed a Committee to inquire into the monetary situation. It consisted of three professional economists (Professors Davidson, Wicksell and Brisman) and three bank directors under the chairmanship of the Governor of the Riksbank. The economists and the bankers disagreed about most things;[5] but they were unanimous on one matter. They proposed " a qualitative rationing of credit "

[1] Professor Cassel in his *Money and Foreign Exchange after 1914* (1919), p. 83, wrote: " This gold exclusion was a measure of such importance that the very highest interest will always be attached to it by future writers on monetary history."

[2] According to Wicksell the only way of meeting the situation was through a system of duties on exports and premiums on imports (*i.e.* the sale by the State of imported goods under the import price). In this way the internal price level could be lowered without affecting the exchange rate. See " Medel mot dyrtiden," *E. T.*, 1916, p. 304.

[3] See D. Davidson, " Riksbankens sedelutgivning," *E. T.*, 1918, No. 3, p. 106.

[4] E. Heckscher, in " Sweden, Norway, Denmark and Iceland in the World War " (*Economic and Social History of the World War*, ed. Shotwell), 1930, p. 210.

[5] See Betänkande rörande åtgärder för penningvärdets reglering. (Official publication, 1918.)

together with a stricter regulation of foreign credits. Davidson defended this proposal against the severe attacks of Professor Heckscher by emphasising the serious depletion of Sweden's capital resources and the inadvisability of relying merely on a high discount rate.[1] A Capital Control Board, under the ægis of the Central Bank, was actually formed in October 1918; but it did not come to fruition, as the Armistice completely altered the situation.[2]

Immediately after the War an early return to the gold standard was advocated by Professor Heckscher. Davidson[3] supported Wicksell's view that "to hitch our monetary waggon to a train without knowing where it is going seems to me hardly worthy of a country whose economists, old and young, possess *at least* as profound an understanding of monetary matters as those of any other country."[4] Nevertheless, Sweden led the way in returning to the gold standard in 1924.

3. *The "Value of Goods" and the "Value of Money."*

Davidson developed his monetary theory in several articles published in *Ekonomisk Tidskrift*.[5] To do justice to his doctrine it would be necessary to explain his peculiar absolute cost theory of value which derives from Ricardo; but it is not proposed to attempt it here. All the difficulties of the Ricardian theory are, of course, encountered, but they are not surmounted. He has never given valid reasons for not accepting Wicksell's statement of the theory of value in "Über Wert, Kapital und Rente" and Vol. I of the Lectures, but clings to the idea that "when the value relation between two goods changes, it may be that the absolute value of one of them alters, or that of both in opposite directions, or in the same direction but in different degree."[6] The doctrine of the "value of money" is thus developed in conjunction with the notion of the "value of goods" based on an absolute cost theory.

According to Davidson's conception, the relation of the part to the whole in the case of a stock of goods is different from what it is in the case of money. A stock of commodities is a collection of individual items; but the units in a stock of money have signi-

[1] "Ransonering av kapital," *E. T.*, 1918, No. 8, pp. 267 ff., and "Ransonering av kapital än en gång," *E. T.*, 1918, No. 9, pp. 289 ff.

[2] See Heckscher, *op. cit.*, pp. 234–5.

[3] "Striden om Sveriges myntfot," *E. T.*, 1923, pp. 132–3.

[4] Wicksell, "Växelkursernas gåta," *E. T.*, 1919, p. 103.

[5] 1917, 1918, 1920, 1922, 1923, 1925, 1926, 1931 and 1933.

[6] "Valutaproblemets teoretiska innebörd," *E. T.*, 1920, p. 73.

ficance *only* because they are parts of the whole. An increase in the number of money units is nothing but a splitting up of the whole into smaller parts.[1] He then argues that the problem of the value of money has two aspects : the value of the total stock of money and the value of the monetary unit. Both these can change. The value of the total stock of money will depend on changes in the rate of turnover of the stock of goods per unit of time.[2] The value of the unit of money will alter through a splitting up of the total stock of money into a larger or smaller number of units. The forces which determine the rate of turnover of goods per unit of time are largely independent. But the value of the monetary unit can be arbitrarily controlled, in the sense that the whole can be split up into a larger or smaller number of units.

What, then, is the implication of a monetary policy which aims at giving the monetary unit a constant objective value? It means that money should be " managed " in such a way that commodity prices should always correspond to the objective, but variable, values of the commodities.[3] Expressed in more usual terms, it implies that when productivity rises the price level should fall correspondingly; and when productivity diminishes the price level should rise in the same proportion. In this way the price of the " composite commodity " would vary in the same proportion and direction as the quantity of means of production necessary to produce it. This was a rough formulation of a " neutral " money theory.

In his interpretation of war-time inflation in Sweden Davidson always gave due weight to the " scarcity of commodities." [4] The rise in the price level which can be imputed to this cause is a necessary occurrence and does not involve a fall in the value of the monetary unit in his sense of the term. No change in the money rate of interest is called for, in so far as the price level merely rises in proportion to the change in productivity. If monetary policy were to keep the price level stable, a redistribution of incomes would take place, so that the recipients of fixed incomes would find their purchasing power undiminished. They would

[1] See " Till frågan om penningvärdets reglering under kriget och därefter," *E. T.*, 1923, pp. 216 ff.

[2] The velocity of circulation is determined partly by the rate of turnover of goods during the unit period and partly by habits regarding cash holdings. It is pointed out that velocity varies for different kinds of payments; and it is assumed that in the short run it can usually be regarded as constant.

[3] *Loc. cit.*, pp. 225–6.

[4] *E.g.* see " Riksbanken och penningvärde under kristiden," *E. T.*, 1925, pp. 1–22.

thus suffer nothing from the decline in productivity and their incomes would involve the utilisation of a larger proportion of the country's means of production.[1]

If there is no such change on the side of goods and the price level rises owing, *e.g.*, to the money rate being below the natural rate, there will be a redistribution of incomes to the detriment of the recipients of fixed incomes. This rise in the price level denotes a fall in the value of the " monetary unit " and the remedy for it is a " normal money rate of interest." [1]

It is relevant here to refer to the contribution which Davidson made to the controversy between Wicksell and Gustav Åkerman in 1922. This discussion turned on the difference between the doctrine of the " normal rate of interest " found in Wicksell's *Geldzins und Güterpreise* and the position taken up in the *Vorlesungen*. In the former work Wicksell held the view that every movement of the general price level is to be attributed to a discrepancy between the money and the natural rate: in the *Vorlesungen*, however, he conceded that an increase in the supply of gold or an issue of paper money can lead to a rise in the price level even though the loan rate of interest is " normal." Gustav Åkerman in an article in *Ekonomisk Tidskrift* in 1921 tried to show that the *Geldzins und Güterpreise* doctrine was the correct one.[2] He takes a case where paper money is the only circulating media and the State takes over the savings of the community for unproductive expenditure and pays for them by an issue of paper money. This obviates the fall in the natural rate which the addition to real capital would have otherwise brought about; the savers put the notes in the banks and there will be no rise in the price level unless the banks allow these notes to get into circulation by reducing their loan rate below the natural rate. To complete the argument he maintains that, although the loan rate may be nominally equal to or above the natural rate, there will be a stimulus to investment as long as the " subjective loan rate," in Irving Fisher's sense, is below the natural rate. In this way Åkerman seeks to draw out the logical conclusions of the doctrine, expressed imperfectly by Wicksell in *Geldzins und Güterpreise*, and concludes that the banks by maintaining a " normal " money rate can stabilise the general price level.

Space does not allow us to give a full account of Wicksell's

[1] See " Till frågan om penningvärdets reglering under kriget och därefter," *E. T.*, 1922, pp. 90–114.

[2] See G. Åkerman, " Inflation, penningmängd och ränta," *E. T.*, 1921, pp. 143–62; and 1922, pp. 5–9.

reply.[1] He admitted the weakness of Chapter XI of *Geldzins*, but asserted that the version of his views expressed in the *Vorlesungen* was designed to remedy that imperfection. He conceded that Fisher's concept of a " real rate " was a useful one; but it did not help to explain the *origin* of a price movement. The idea of a " subjective loan rate " assumes that the movement of the price level has been going on long enough to enable the entrepreneurs to form some opinion as to its future course.

Davidson intervened in this controversy[2] in the rôle of an honest broker. He thoroughly enjoyed the spectacle of Wicksell's temper being somewhat ruffled by the awkward appearance of one of the skeletons from his cupboard, and ironically remarked that Wicksell should have been pleased, for whichever side won it would be a Wicksellian victory. Davidson begins by suspecting that Åkerman and Wicksell do not mean the same by " normal rate of interest." Åkerman had omitted to give a precise definition; and if his normal rate denoted that rate which would prevent inflation, then his theory would be correct but would also be mere tautology.

The money rate is normal when it is equal to the marginal rate of return on capital investment. Davidson agrees that a normal loan rate does prevent the injection of new money through the channel of the Bank. But Åkerman's thesis was that new paper money issued by the State in the usual way cannot bring about inflation as long as the Bank keeps its rate normal. This is incorrect. If there is to be no rise in the price level as a result of an issue of paper money, the Bank must simultaneously withdraw a corresponding amount of money from circulation. It can do this only by raising its loan rate *above* normal. In this way entrepreneurs will be prevented from getting access to the current supply of capital disposition, so that the demands of the State can be met out of these resources without a rise in the price level. If the State increases its command over the community's resources through a general income tax and thereby causes a rise in the natural rate, the maintenance of a normal loan rate will prevent a rise in prices. But if the State increases its command by issuing new paper money, a normal rate will not be sufficient to obviate a rise in the price level.

In brief, Davidson thinks that the instrument of the bank rate is an effective means of preventing changes in the value of money *only* in certain well-defined cases, *e.g.* when the initial cause of inflation is a loan rate below the natural rate. Movements of

[1] *E. T.*, 1921, pp. 167–71; and 1922, pp. 10–12.

[2] " Om begreppet normal penning ränta," *E. T.*, 1922, pp. 13–30.

the price level are brought about by many complex causes. When the impetus comes from State borrowing or the inflow of gold from countries experiencing an inflation, a " normal " loan rate is no deterrent. The " value of money " must be distinguished from the " purchasing power of money " : in so far as the price level moves in response to factors on the goods side, *e.g.* a change in productivity, the bank rate should be left unchanged. Finally, a policy of keeping the value of money stable may imply instability in the system as a whole. The measures required for stabilising the value of money might inflict greater fluctuation on the economic system than a change in the value of money would involve in similar circumstances.

4. *The Importance of Davidson's Work.*

Davidson has always excelled as a critical mind, and deserves full credit for the penetrating way in which he exposed the weaknesses in Wicksell's monetary propositions. Just as in his first essay he caught a glimpse of ideas regarding the accumulation of capital which were later to be seen in their fullness in Böhm-Bawerk's treatise, he opened up a line of thought in his first controversy with Wicksell which has become a commonplace in post-war fluctuation theory. He ranks as one of the keenest students of Ricardo; but it is a pity that he should have tried to present a revised version of the classical theory of value. This part of his work has had no fruitful effect, though it did not vitiate his contribution to monetary theory. He was able from the beginning to reject the idea that the value of money and the general level of prices are synonymous and correlative concepts, and that the aim of monetary policy should be the stabilisation of the price level.[1] Building on Wicksell's fundamental theory of the " normal " rate of interest he was led to a position similar in essence to that expressed later by Mr. D. H. Robertson in the following words : " The aim of monetary policy should surely be not to prevent all fluctuations in the price level, but to permit those which are necessary to the establishment of appropriate alterations in output and to repress those which carry the alterations in output beyond

[1] It is interesting that Davidson, in a recent article " Knut Wicksell och varuvärdet " (*Ekonomisk Tidskrift*, 1934, Häft I), tries to show, on the basis of quotations from an article written by Wicksell in 1925, that Wicksell had virtually admitted the validity of his doctrine regarding " the value of goods " and " the value of money." Wicksell's article, which is now reprinted in the *Beiträge zur Geldtheorie* (ed. by Hayek), was chronologically his last word on the subject, but was never meant to be taken as a careful restatement of his doctrinal views.

the appropriate point." [1] Moreover, Davidson has made a cardinal point of what Mr. Robertson calls "fluctuations in the desirability of acquiring instruments." [2] Perhaps his greatest achievement was to be the first to show that, to use the words of Professor Robbins, "the proposition that the money rate of interest which keeps prices stable is also the rate which clears the market of voluntarily accumulated capital, breaks down when the conditions of capital supply are either progressive or retrogressive." [3]

We have seen that Davidson attached much importance to the redistribution of incomes that occurs during fluctuation. If he had carried his analysis further he might have contributed more to the essentials of a theory of the trade cycle. His handling of it was originally marred by his ethical preoccupation; and in the later developments it got mixed up with his "absolutist" theory of the "value of goods." It is better, however, to start from the position established by Mises,[4] who pointed out that changes in the money supply affect the rate of interest through the medium of a redistribution of property and incomes. The change in the rate of interest is not, therefore, a direct function of the change in the supply of money: it depends how the distribution of incomes has been affected. A new income distribution causes individuals to apply their resources as between present and future differently from what they would have done otherwise. Mises suggests that the change in the distribution of income due to the fall in the value of money *may* bring about an increase in saving and a lowering of the cost of living.

The significance of this has not been sufficiently realised in discussions of forced saving. Wicksell's view was that, given a fall in the money rate, the forced saving done by fixed income recipients might more than offset the decline in voluntary saving as a result of the lower rate of interest; consequently the process would not be cumulative, but would stop as soon as the increase in the supply of real capital had brought the rate of return down to the level of the money rate.[5] But this overlooks the whole significance of forced saving. What can be reasonably argued is that a lowering of the money rate can bring about shifts within the income structure which will lead to a higher rate of *voluntary* saving; the

[1] *Banking Policy and the Price Level* (1926), p. 39.

[2] *Op. cit.*, p. 94.

[3] Introduction to Wicksell's *Lectures on Political Economy*, Vol. I. (1934), p. xvii.

[4] *Theorie des Geldes* (1924), pp. 358 ff.

[5] *Vorlesungen*, Vol. II. pp. 226–7.

discouraging effect of a lower interest rate (assuming that to be the case) may be more than compensated for. If this happens, the element of forced saving in the situation will be prevented from producing a cumulative rise in the price level and a lengthening of the structure of production which would later prove "artificial." It must be added, however, that this argument assumes that, after the initial impact of the fall in the money rate on prices, the entrepreneurs expect prices to continue unchanged in future. If they act on the anticipation that prices will go on rising, the net increase in voluntary saving will be powerless to arrest a cumulative process away from equilibrium.

The direct influence of Davidson's life-work has been confined to Sweden. Wicksell had a very high opinion of his analytical ability and always treated his pronouncements with the greatest respect; and this admiration was shared by the generation of economists represented by Professors Sommarin, Brock, Heckscher, Brisman and Bagge. The younger school of Swedish economists have inherited a rich legacy of thought, and the imprint of Davidson's work is easily discernible. Working with this refined equipment, Professors Lindahl and Myrdal have proceeded to reinterpret the Wicksellian theory of the "cumulative process" and have deepened our understanding of the causation of fluctuation by linking the theory of risk with monetary theory. Lindahl's *Penningpolitikens Mäl och Medel*[1] contains a valuable analysis of "the cumulative process" under various assumptions. He chooses as the given end of monetary policy "the diminution of the risks which imperfect foresight implies for economic activity, thereby reducing economic friction to a minimum." He then expounds, in various approximations, the means best calculated to achieve this end. The practical norm for monetary policy which he suggests is that the price level of consumers' goods should vary inversely with productivity. In this respect Lindhal proves to be a good disciple of Davidson. Myrdal, having written a valuable book on risk and equilibrium theory,[2] has devoted himself to a reinterpretation of Wicksell's "natural" rate as a value-productivity rate and has sought to define the concept of equilibrium which is appropriate for the study of fluctuation in a monetary economy.[3] Part of his inspiration is also traceable to Davidson's writings. Space forbids the mention of the contri-

[1] A revised version of this work in English is expected in the near future.

[2] *Prisbildningsproblemet och Föränderligheten* (1927).

[3] "Der Gleichgewichtsbegriff als Instrument der geldtheoretischen Analyse," *Beiträge zur Geldtheorie*, ed. Hayek (1933).

butions of other Swedish economists, *e.g.* Professors Ohlin, G. Åkerman and Dr. J. Åkerman.

As far as the outside world is concerned, Davidson has throughout his life been content to hide his bright light under a bushel; but no one who is acquainted with his work will doubt that he is among the powerful thinkers recruited by economic science within the last two generations.

BRINLEY THOMAS

London School of Economics.

EDGEWORTH'S THEORY OF DUOPOLY PRICE[1]

A NEW generation often brushes decisively aside what was once considered the final truth. This paradox is definitely, though somewhat inconspicuously illustrated in the theory of *competition among a few.* Cournot was first to perceive the problem.[2] When Cournot's work finally attracted posthumous attention, Professor F. Y. Edgeworth became his best known critic.[3] So effective was Edgeworth's counter-approach that in the very last years of his life he was still able to say, "The demolition of Cournot's theory is generally accepted."[4] But in the same way that Edgeworth disputed the departed shade of Cournot, so in our generation voices arise to contradict his own spirit.[5] In the face of a second general reversal of opinion, the present article is in part a defence of Edgeworth.

It is important to note that Edgeworth's contribution to the theory of duopoly is conditioned by the assumption of increasing cost. In his paper on "The Pure Theory of Monopoly" he

[1] This article was completed by the writer during his tenure of a Sterling research fellowship at Yale University.

[2] A. A. Cournot, *Recherches sur les principes mathématiques de la théorie des richesses* (Paris, 1838). English translation by N. T. Bacon, with Introduction and Notes by Irving Fisher (Macmillan, 1897; reprinted 1927, 1929). See also A. A. Cournot, *Principes de la théorie des richesses* (Paris, 1863); *Revue summaire des doctrines économiques* (Paris, 1876).

Luigi Amoroso, Italian mathematical economist, was Cournot's most ardent disciple. *Lezioni di economica matematica* (Bologna, 1921), pp. 254 ff.; "La curva statica di offerta," *Giornale degli economisti*, Vol. LXX (1930), pp. 1–26.

[3] F. Y. Edgeworth, *Mathematical Psychics* (London, 1881); reprint by the London School of Economics and Political Science (1932). "La teoria pura de monopolio," *Giornale degli economisti*, July 1897, pp. 13–31; English translation in F. Y. Edgeworth, *Papers Relating to Political Economy*, Vol. I, pp. 111–42.

[4] Edgeworth, *Papers*, Vol. I, p. 111.

[5] Knut Wicksell, "Mathematische Nationalökonomie," *Archiv für Sozialwissenschaft und Sozialpolitik*, Vol. LVIII, Heft 2 (1927), pp. 252–81, especially pp. 267–75; Joseph Schumpeter, "The Instability of Capitalism," ECONOMIC JOURNAL, Vol. XXXVIII (1928), particularly pp. 369–70 n.; Harold Hotelling, "Stability of Competition," ECONOMIC JOURNAL, Vol. XXXIX (1929), pp. 41–57; E. H. Chamberlin, "Duopoly: Value when Sellers are Few," *Quarterly Journal of Economics*, Vol. XLIV (1929), pp. 81–100; Erich Schneider, "Zur Theorie des mehrfachen Monopols," *Archiv für Sozialwissenschaft und Sozialpolitik*, Vol. LXIII (1930), pp. 541–46; Erich Schneider, *Reine Theorie monopolistischer Wirtschaftsformen* (Tübingen, 1932), especially pp. 132–75; Edward Chamberlin, *The Theory of Monopolistic Competition* (Harvard University Press, 1933), pp. 30–55.

featured " an extreme case of increasing cost," one in which there were no costs at all except in the sense that production beyond a certain limit was subject to infinite cost, *i.e.* impossible. A case of gradually increasing cost is treated in mathematical language in his review of Amoroso.[1] The form in which Edgeworth's ideas are expressed, however, is not nearly so important as their content. Therefore, instead of following the unusual diagrams and symbols of his original presentation, a more conventional illustration may be considered.

Let us suppose that a certain uniform commodity is produced for a given market in twelve factories, each subject to identical conditions of increasing cost as shown in Table I. The figures in this table include transportation and selling costs as well as those of physical production. The product is sold to an extremely

TABLE I

Schedule of Costs for each Factory.

Quantity produced.*	Fixed Costs.	Total Variable Costs.	Average Variable Costs.	Marginal Costs.
0	2,000	0	0·10	0·10
2,000	2,000	300	0·15	0·20
4,000	2,000	800	0·20	0·30
6,000	2,000	1,500	0·25	0·40
8,000	2,000	2,400	0·30	0·50
10,000	2,000	3,500	0·35	0·60
12,000	2,000	4,800	0·40	0·70
14,000	2,000	6,300	0·45	0·80
16,000	2,000	8,000	0·50	0·90
18,000	2,000	9,900	0·55	1·00
20,000	2,000	12,000	0·60	1·10

* Units per interval of time. All quantities in the following tables and in the text are to be interpreted in this sense.

large number of buyers, each of whom purchases a very small part of the total. An assumed schedule representing the total demand is shown in Table II. In this particular case 0·60 may be termed the price of perfect competition, for at this price each factory can produce and sell as under perfect competition a quantity (10,000 units—see Table I) the marginal cost of which is exactly equal to price 0·60. The total production of all twelve factories, *i.e.* 120,000 units, is then exactly equal to the quantity demanded at price 0·60 (see Table II). On the other hand, if all twelve factories are combined under monopoly management,

[1] " The Mathematical Economics of Professor Amoroso," ECONOMIC JOURNAL, Vol. XXXII (1922), pp. 400–407.

it may be shown on the basis of the information in Tables I and II that the monopoly realises a maximum profit at price 1·00.

TABLE II

Demand Schedule

Price.	Quantity.
0·40	144,000
0·50	132,000
0·60	120,000
0·70	108,000
0·80	96,000
0·90	84,000
1·00	72,000
1·10	60,000
1·20	48,000

Special attention is invited, however, to the behaviour of prices when productive facilities are divided between two independent combinations. For convenience in calculation let us assume that each combination controls six factories. From Table I may be derived a schedule of costs for each group of six factories as shown in Table III. The managers of the two competing combinations may be designated *A* and *B*. When the

TABLE III

Schedule of Costs for each Group of Six Factories.

Quantity produced.	Fixed Costs.	Total Variable Costs.	Average Variable Cost.	Marginal Cost.
0	12,000	0	0·10	0·10
12,000	12,000	1,800	0·15	0·20
24,000	12,000	4,800	0·20	0·30
36,000	12,000	9,000	0·25	0·40
48,000	12,000	14,400	0·30	0·50
60,000	12,000	21,000	0·35	0·60
72,000	12,000	28,800	0·40	0·70
84,000	12,000	37,800	0·45	0·80
96,000	12,000	48,000	0·50	0·90
108,000	12,000	59,400	0·55	1·00
120,000	12,000	72,000	0·60	1·10

market opens, it may be supposed that *A* offers to sell [1] at price 1·00. If *A* maintains this price, and if *A*'s customers all desert

[1] It is implicitly assumed in Edgeworth's analysis of duopoly that prices are named by sellers. Buyers have an indirect influence but no direct voice in the determination of prices. On the other hand, prices in Cournot's market depend upon competitive bidding among buyers, and sellers have no direct voice. For further analysis of this difference see A. J. Nichol, "A Re-appraisal of Cournot's Theory of Duopoly Price," *Journal of Political Economy*, Vol. XLII (1934), pp. 80–105.

him in so far as a sufficient quantity is available at any lower price, it is to *B*'s greatest advantage to sell at a price slightly lower than 1·00, taking all *A*'s business temporarily away from him. Edgeworth assumed extremely minute gradations in price, but no great violence is done to his theory if instead no gradations in price are considered less than one-hundredth of the standard monetary unit. *B* then may be expected to sell at price 0·99. With positions reversed, *A* finds it to his greatest immediate advantage to cut to price 0·98. Prices in accordance with

TABLE IV

Step.	*A*'s Price.	*B*'s Price.	*A*'s Sales.	*B*'s Sales.
1	1·00	—	72,000	0
2	1·00	0·99	0	73,200
3	0·98	0·99	74,400	0
4	0·98	0·97	0	75,600
15	0·86	0·87	88,800	0
16	0·86	0·85	0	90,000
* 17	0·84	0·85	88,800	2,368
18	0·84	0·83	4,738	87,600
19	0·82	0·83	86,400	7,108
20	0·82	0·81	9,478	85,200
21	0·80	0·81	84,000	11,850
22	0·80	0·79	14,222	82,800
23	0·78	0·79	81,600	16,595
24	0·78	0·77	18,969	80,400
29	0·72	0·73	74,400	30,845
30	0·72	0·71	33,222	73,200
31	0·70	0·71	72,000	35,600
* 32	0·70	0·69	37,978	70,800
* 33 ?	0·68	0·69	69,600	40,357

* Indicates step to which special reference is made in the text.

Edgeworth's conception continue to drop, with results as shown in Table IV.

In each of the first steps of the process the manager who has just cut his price takes up all the available business, leaving none at all for his rival. As soon as prices fall below 0·85, however, if the leader in any new price adjustment sells all that is asked at his price, he loses money on part of his sales, as may be seen by comparing Table II and the schedule of marginal costs in Table III. Consequently, in step 17 Table IV and thereafter, the price leader, whether *A* or *B*, may be expected to restrict his sales and meet only part of the demand. Thus the momentarily passive seller in each of these steps retains a part of the business. This part at first is small; but as prices continue to fall, the price leader, restricting his own sales in order to keep his marginal cost down

to the level of his price, leaves more and more business to his rival. The process may continue until at price 0·60 the two competitors share the business equally.[1]

Before price 0·60 is reached, however, one or the other of the two rival managers may perceive that an increase in price has become profitable. Whenever either competitor cuts his price but fails to supply all those who are willing and able to buy from him, the other competitor, instead of offering his rival's customers a further reduction in price, may if he chooses deal only with those unable to buy from his rival, and charge them a higher price.[2] Such procedure is possible in step 17 and every step in Table IV thereafter; but at first, because of the small volume of business thus obtainable, this sort of tactics does not pay. Even when it becomes possible to make a considerable profit in this manner, further reductions in price continue for some time to be more profitable. As prices drop lower and lower, however, the advantage gained by underselling one's rival becomes less pronounced.

Buyers are repeatedly divided into two groups: (1) those who succeed in purchasing at the lower of two prices, and (2) those who do not. A change in the composition of each group may be expected with each new price adjustment, but at any given time each group tends to have at any particular price or over any given range of prices the same elasticity of demand.

[1] The price-cutting process just described creates the impression in some readers' minds that all Edgeworth described was "cut-throat competition." See, for example, the reaction of Dr. Erich Schneider, *Reine Theorie monopolistischer Wirtschaftsformen*, pp. 132–75. Edgeworth, however, anticipated and refuted this interpretation in his own summary analysis.

"The instability is due not merely to the hope of one monopolist to ruin his rival by 'cutting prices,' a case that has often been described, but also to a more fundamental though less obvious cause. The instability does not cease in cases where it is not possible for one monopolist to drive the other completely off the field." (Edgeworth, *Papers*, Vol. I, p. 136.)

[2] Edgeworth first advanced the proposition that perfect uniformity of price is not a necessary assumption in analysis of imperfect competition. See *Mathematical Psychics*, p. 47. Cournot's assumption of one and the same price for both duopolists immensely simplified his analysis, and at the same time divorced it from reality. If two sellers, subject to no external interference, always charge the same price, there can be only two explanations of the fact. Either there is a price agreement between them, or else price is determined by competitive bidding among buyers for the combined offerings of both sellers. In the first case we have monopoly but not duopoly; in the second case, a phenomenon which seldom actually occurs.

In most cases in which sellers charge different prices, buyers also pay different prices—even though offerings are exactly alike. Sales do not necessarily take place at exactly the same time. Presumably there is first a rush to buy at the cheaper price; but a sensible person, finding the article he desires all sold out in one place, does not refuse to buy it elsewhere at a higher price if it is worth that much to him.

Though there may be great variation in the nature of individual demands,[1] nevertheless, in accordance with the law of large numbers, the total demand of each group tends to have the same general characteristics as the demand of the whole body of buyers, and in particular the same elasticity.

In accordance with this tendency a turning-point is reached in the movement of prices when step 32 in Table IV has been completed. At this juncture *B* has sold 70,800 units at price 0·69. This amount is 59/91 of 109,200 units, the total quantity demanded at this price. Then to the buyers who if they could would take the remaining 32/91 at price 0·69, *A* can sell 32/91 of the total demanded at any higher price. A schedule of such amounts is shown in Table V. By interpolation in Tables III

TABLE V

(Derived from Table II.)

Demand Schedule for A*'s Offerings at Prices above* 0·69 *when* B *is Selling* 70,800 *Units at Price* 0·69.

Price.	Quantity.
0·70	32/91 of 108,000 = 37,978
0·80	32/91 of 96,000 = 33,758
0·90	32/91 of 84,000 = 29,538
1·00	32/91 of 72,000 = 25,319
1·10	32/91 of 60,000 = 21,099
1·20	32/91 of 48,000 = 16,879

and V it may be shown that *A* obtains a maximum profit at price 0·96. At this price he obtains more profit than at any other price included in the schedule in Table V. As shown in Table VI, *A*'s profit at 0·96 is also slightly greater than he can obtain by cutting his price to 0·68. No similar condition has

TABLE VI

Results of Two Possible Price Quotations by A *following Step* 32, *Table IV.*

Price.	Sales.	Gross Receipts.	Total Cost.	Net Profit.
0·96	27,007	25,926·72	17,739·80	8,186·92
0·68	69,600	47,328·00	39,144·00	8,184·00

[1] Edgeworth simplified his analysis by assuming all individual demands to be exactly alike. The same general results tend to follow even if there is great variety in the nature of individual demands.

previously arisen. At this point, therefore, A may be expected to raise his price to 0·96. It is then to B's advantage to raise his price to 0·95. As soon as he does, another long series of price reductions begins; but when either A's price or B's price becomes equal to 0·69, the other competitor will raise his price to 0·96 again. Thus, in accordance with Edgeworth's assumptions, prices tend to fluctuate perpetually within the limits of 0·96 and 0·69.

From a superficial reading of Edgeworth's paper on "The Pure Theory of Monopoly" it is easy to gain a false impression of the range of price oscillation in his market. Edgeworth himself described in detail an initial fluctuation between the level of pure monopoly and that of unlimited competition, but in accordance with his analysis prices by no means continue to move throughout this entire range.

"And so we return to the position from which we started and are ready to begin a new cycle. This need not have exactly the same path as that which we have described. For at every stage in the fall of the price, and *long before it has reached its limiting value*, it is competent to each monopolist to deliberate whether it will pay him better to lower his price against his rival as described, or rather to raise it to a higher, *perhaps* the initial, level for the remainder of the customers of whom he cannot be deprived by his rival." [1]

If we examine closely any particular problem, the narrower range within which Edgeworthian prices tend to be confined may be at least approximately determined. It has been so determined in the problem just discussed. Any formulas to which the answer may be subject are exceedingly complicated; but it may be noted that in general the upper limit of price oscillation is lower than the price of pure monopoly, and the lower limit higher than the price of unlimited competition. Thus 0·96 is lower than 1·00, and 0·69 is higher than 0·60.

Other problems of interest and importance arise if productive facilities are divided among more than two competitors. The twelve factories under consideration may be equally divided among three, four or six independent combinations; and indeed each of the twelve factories may have its own individual management. In all these cases, if no change is assumed in the general behaviour of buyers and sellers, the limits of price oscillation may be determined by the same general arithmetic methods already exemplified. Solutions may be obtained much more

[1] Edgeworth, *Papers*, Vol. I, p. 120. Italics inserted.

quickly, however, by the use of algebra and calculus.[1] At the same time much finer gradations in price may be considered. Let N stand for the number of competing groups. The total demand represented in Table II may also be represented by either one of two equivalent equations, viz. :

(1) $\mathrm{D} = -120{,}000\,p + 192{,}000.$

(2) $p = \frac{-D}{120{,}000} + 1{\cdot}60.$

The total cost of any quantity s produced in any factory in this problem (see Table I) may be represented by the function :

(3) $\frac{s^2}{40{,}000} + 0{\cdot}10s + 2000.$

Each manager controls $\frac{12}{N}$ factories. The total cost of $\frac{12}{N}s$ units produced in $\frac{12}{N}$ factories is :

(4) $\frac{12}{N}\left[\frac{s^2}{40{,}000} + 0{\cdot}10s + 2000\right].$

Let $\frac{12}{N}s$ be designated S. Then substituting $s = \frac{NS}{12}$ in (4), and simplifying, we have the total cost of any quantity S produced in any group of $\frac{12}{N}$ factories expressed as follows :

(5) $\frac{NS^2}{480{,}000} + 0{\cdot}10S + \frac{24{,}000}{N}.$

Corresponding marginal cost is represented by the first derivative of (5) with respect to S :

(6) $\frac{NS}{240{,}000} + 0{\cdot}10.$

$N - 1$ managers may be supposed in the process of competition to reduce their prices to a general level p_1, their individual prices differing from p_1, if at all, by negligible amounts. At this price or prices they do not satisfy the entire demand, but restrict production so that marginal cost is equal to price. Thus, if S_1 represents the production of anyone of them,

(7) $p_1 = \frac{NS_1}{240{,}000} + 0{\cdot}10.$

Solving for S_1 :

(8) $S_1 = \frac{1}{N}24{,}000\,(10p_1 - 1).$

[1] Those not interested in the mathematical analysis following may perhaps be interested in its results shown in Table VII, p. 60 below. The symbols, D for amount demanded, and p for price, are adapted from Cournot.

The total amount produced and sold by $N - 1$ competitors is :

$$(9)\quad \frac{N-1}{N}\,24{,}000\,(10p_1 - 1).$$

The total demand at price p_1 conforms with the equation :

$$(10)\quad D = -\,120{,}000\,p_1 + 192{,}000.$$

The unfulfilled demand is equal to the difference between (9) and the right-hand member of (10). This difference may be expressed as follows :

$$(11)\quad \frac{1}{N}\,24{,}000[(-\,15N + 10)p_1 + 9N - 1].$$

Dividing (11) by the right-hand member of (10), we obtain the proportion of the demand unfulfilled :

$$(12)\quad \frac{(-\,15N + 10)p_1 + 9N - 1}{N(-\,5p_1 + 8)}.$$

With $N - 1$ competitors selling the quantity indicated in (9) at price p_1, it is assumed that the other competitor can fulfill the unsatisfied portion of the demand at any higher price such as p_2. By (1) and (12) his sales S_2 at price p_2 conform with the equation :

$$(13)\quad S_2 = \frac{(-\,15N + 10)p_1 + 9N - 1}{N(-\,5p_1 + 8)}(-\,120{,}000p_2 + 192{,}000).$$

Solving for p_2 :

$$(14)\quad p_2 = \frac{N(-\,5p_1 + 8)S_2}{-\,120{,}000[(-\,15N + 10)p_1 + 9N - 1]} + 1{\cdot}60.$$

If profits at price p_2 are to be a maximum, marginal revenue equals marginal cost. Thus :

$$(15)\quad \frac{N(-\,5p_1 + 8)S_2}{-60{,}000[(-15N+10)p_1+9N-1]} + 1{\cdot}60 = \frac{NS_2}{240{,}000} + 0{\cdot}10.$$

Now if the manager who raises his price does so at the point where a further slight reduction in price would bring him a slightly smaller profit, we may disregard the extremely small differences involved and set the two possible profits equal. Thus :

$$(16)\quad p_1S_1 - \frac{NS_1^2}{480{,}000} - 0{\cdot}10S - \frac{24{,}000}{N} = p_2S_2 - \frac{NS_2^2}{480{,}000} - 0{\cdot}10S_2 - \frac{24{,}000}{N}.$$

To find the particular values of p_1, p_2, S_1, and S_2, we have four equations, viz. (7), (13), (15), and (16). Solving simultaneously :

$$(17)\quad p_1 = \frac{5 + 3\sqrt{4N^2 + 1}}{2(3N - 2)} - 0{\cdot}40.$$

$$(18)\quad p_2 = \frac{(10p_1 - 1)^2}{300} + 0{\cdot}85.$$

Solutions may also be obtained for S_1 and S_2, but are of no particular importance in present discussion. By assigning to N in (17) particular values 2, 3, 4, 6, and 12 respectively, corresponding values of p_1 may be obtained. These are shown in Table VII together with the corresponding values of p_2.

TABLE VII.

Ranges of Price Oscillation when Twelve Factories are Equally Divided among Different Numbers of Competitors.

Number of competitors .	N	2	3	4	6	12
Factories controlled by each . . .	$\frac{12}{N}$	6	4	3	2	1
Upper limit of price oscillation . . .	p_2	0·964+	0·953+	0·948+	0·943−	0·938+
Lower limit of price oscillation . . .	p_1	0·686−	0·657−	0·642+	0·628+	0·614−
Total range of oscillation	$p_2 - p_1$	0·278	0·296	0·306	0·315	0·324

The surprising feature of price oscillation according to Table VII is that the range of oscillation increases with each increase in the number of competitors. Thus when there are only two competitors, prices tend to fluctuate between 0·686 − and 0·964 +; but when there are twelve, between 0·614 − and 0·938 +. If productive facilities are assumed to be divided among still larger and larger numbers of competitors without any change in the general cost situation or the other assumptions of the problem, the lower limit of price movements approaches the freely competitive level of 0·60, but the upper limit descends only towards $0{\cdot}93\frac{1}{3}$. At first sight, then, Edgeworth's theory of competition among a few does not appear to merge, as does Cournot's theory, into an acceptable theory of competition among many. With any increase in the number of competitors, prices, instead of fluctuating less, fluctuate more.[1] In *Mathematical*

[1] Cf. Edward Chamberlin, *Theory of Monopolistic Competition*, pp. 40 ff. Professor Chamberlin believes the continued instability of Edgeworth's prices to be explained by an inconsistent monopolistic condition, viz. the division of the market into parts at the lower limit of price fluctuation. Edgeworth's market, however, is repeatedly and consistently divided into parts. Before the lower limit of price oscillation is reached, each competitor, dissatisfied with the number of customers his rival leaves him, brings about a new division in the market by an additional price cut. At the lower limit of price oscillation, one competitor, accepting the customers whom his rival leaves, charges them a higher price. This difference arises logically out of past events, and involves no contradiction or inconsistency.

In an attempt to better Edgeworth's theory Professor Chamberlin falls into the same sort of inconsistency of which he accuses the original author. At the lower limit of price fluctuation he introduces competitive bidding among buyers —though elsewhere in his own revised version of the story no such bidding occurs.

Psychics Edgeworth analysed transactions between a few sellers and a few buyers, and advanced the proposition that any increase in the number of either made " contract " less indeterminate.[1] In his paper on " The Pure Theory of Monopoly " he considered dealings between a few sellers and many buyers, but in this case any increase in the number of sellers seems to make " contract " more indeterminate.

In actual practice the increasing range of price fluctuation may apply to a smaller and smaller proportion of the market. With productive facilities divided among numerous competitors, only the most alert and the most venturesome may raise their prices much above the lower level of oscillation; but if all competitors are equally alert, all of the market is equally unstable in accordance with Edgeworth's assumptions.[2]

The speed of Edgeworthian price movements may be expected to change with any increase in the number of competitors. Any downward movement of prices tends to be swifter the more competitors there are. On the other hand, under the same conditions any upward price movement tends to be retarded. Thus, though prices fluctuate more widely when competitors are numerous, prices tend also to fluctuate more infrequently, and when they rise, fall back again more rapidly to a lower level. Upon this basis alone it is possible to reconcile Edgeworth's theory of duopoly with the theory of perfect competition. If prices fluctuate more infrequently with any increase in the number of competitors, eventually they tend towards stable equilibrium.

Fortunately there is still another explanation of the apparent discrepancy. Edgeworth's analysis of competition between two involves an assumption which, though at least partially justifiable under the original circumstances, certainly requires modification when the number of competitors is moderately increased, and must be entirely discarded when the number of competitors is unlimited. When there are only two competitors, and one raises his price above the other's, it is comparatively easy for him to sell to all or almost all buyers who do not succeed in purchasing from his rival, provided his new price does not exceed these buyers' demand prices. Edgeworth assumed full realisation of this possibility by one or the other of his two competitors. As the number of sellers increases, however, it becomes more and more difficult for any one of them to perform a similar feat.

[1] *Mathematical Psychics*, p. 20.

[2] Cf. Chamberlin, *Theory of Monopolistic Competition*, p. 41 n.

Potential customers at any price above the general level are more easily lost in the crowd. Any seller who tries to do business at a higher price has himself more difficulty in being seen or heard. Even if possible buyers come in contact with him, before they pay him his price, they call on other sellers to find out if their offerings have really been exhausted. When there is only one other seller, the temporary exhaustion of other offerings is readily verified; not so when other sellers are many. In the meantime the seller who considers an increase in price is led to reverse his intentions and make further reductions in price. When any seller does increase his price, it is profitable to do so by a more moderate amount. Thus the increasing difficulty of actually transacting all potential business at any higher price narrows the range of price fluctuation, and brings it much nearer the level of perfect competition. No account has been taken of this practical consideration in previous mathematical analysis.

When the number of competitors is unlimited, it becomes impossible for any individual among them to resist successfully a downward movement of price towards the equilibrium level, or to initiate by his own unaided efforts an upward movement from that level. This ultimate elimination of an initial possibility does not lessen the significance of Edgeworth's analysis. In fact it brings out more clearly one of the outstanding differences between competition among many and competition among few. When an unlimited number compete in the sale of the same product, each one to do business must keep his price down to the prevailing market level. On the other hand, when only a few sell the same product, each competitor enjoys a greater degree of liberty in the determination of his own price.

A rising school of young economists is evolving theories of imperfect competition quite different from Edgeworth's.[1] A harvest of new ideas has already been gathered, some of them very unsound. When two or more competitors sell the same general type of product, and one cuts his price slightly below the rest, it has been directly or indirectly assumed that none of the

[1] R. F. Harrod, "Notes on Supply," ECONOMIC JOURNAL, Vol. XL (1930); Joan Robinson, "Imperfect Competition and Falling Supply Price," *ibid.*, Vol. XLII (1932); Edward Chamberlin, *The Theory of Monopolistic Competition*; Joan Robinson, *The Economics of Imperfect Competition*; R. F. Harrod, "The Equilibrium of Duopoly," ECONOMIC JOURNAL, Vol. XLIV (1934); R. F. Harrod, "Doctrines of Imperfect Competition," *Quarterly Journal of Economics*, Vol. XLVIII (1934).

See also Piero Sraffa, "The Laws of Return under Competitive Conditions," ECONOMIC JOURNAL, Vol. XXXVI (1926); Harold Hotelling, "Stability of Competition," *ibid.*, Vol. XXXIX (1929).

other competitors loses many customers.[1] Sellers would be happy indeed if this were always true. Each individual competitor may build up through salesmanship, advertising, location, minor peculiarities of product, personal relationships, and type of service a following not easily estranged; but in addition most markets contain buyers of indeterminate allegiance. To them one brand is not much better than others; one location only a little more convenient; one type of service about the same as the rest. Some buyers have no preference at all for any individual seller or any individual offering. The presence of these *marginal buyers* prevents the practical fulfilment of more than one current theory of imperfect competition. Doubtless Edgeworth's assumption that all buyers are swayed by small reductions in price does not apply to many real situations; but even if a small minority of buyers can be so influenced, the general results may still be much as Edgeworth described.

As an illustration take again with certain alterations the same problem with which the present study begins. Let the conditions now be as follows: (1) The cost of any quantity produced and sold by either of two competitors A and B is again as shown in Table III. (2) The total demand for the commodity still conforms with the schedule in Table II. (3) Either competitor by lowering his price 0·01 below his rival's can take away from him an amount of business equal to *one-sixth* the total amount demanded, but no more. (4) Of the remaining quantity demanded at any given price, one-half is demanded only of A, likewise an equal amount of B. For simplicity in calculation it is assumed that devoted customers in each case are not influenced by any price offered by the rival seller no matter how much lower it may be. (5) Neither competitor practises any sort of price discrimination.

When the market opens, suppose A sells at price 1·00. By quoting a price 0·01 lower B cannot take away all A's business, but he can take away a considerable part of it. It is to his immediate advantage to do so. A then retaliates with a price of 0·98. Prices continue to fall with results as shown in Table VIII, each competitor in turn taking all marginal business away

[1] The assumption is commonly embodied in a *continuous* demand curve for the offerings of each individual seller. Such demand is more truly represented in most cases by a *discontinuous* curve broken into parts at certain price levels. For further criticism see *American Economic Review*, Vol. XXIV (1934), Supplement No. 1, pp. 30–32; A. J. Nichol, "The Influence of Marginal Buyers on Monopolistic Competition," *Quarterly Journal of Economics*, November 1934. Cf. also Marshall, *Principles of Economics*, eighth edition, p. 105 n.

TABLE VIII

Step.	*A*'s Price.	*B*'s Price.	*A*'s Sales to		*B*'s Sales to	
			Established Customers.	Marginal Buyers.	Established Customers.	Marginal Buyers.
1	1·00	—	30,000	12,000	—	—
2	1·00	0·99	30,000	0	30,500	12,200
3	0·98	0·99	31,000	12,400	30,500	0
4	0·98	0·97	31,000	0	31,500	12,600
23	0·78	0·79	41,000	16,400	40,500	0
24	0·78	0·77	41,000	0	41,500	16,600
25	0·76	0·77	42,000	16,800	41,500	0
26	0·76	0·75	42,000	0	42,500	17,000
27	0·74	0·75	43,000	17,200	42,500	0

from his rival. This advantage, however, gradually becomes much less pronounced in comparison with the possibility of raising one's price and dealing only with established customers. The turning-point is reached upon the completion of step 27 in Table VIII. As shown in Table IX, it is more profitable for *B* at this point to lift his price to 0·98 rather than cut it again to 0·73. In previous steps continued reductions in price have been more profitable. When *B* lifts his price to 0·98, *A* raises his also to 0·97. Another cycle is thus begun, and prices continue

TABLE IX

Results of Two Possible Price Quotations by B *following Step* 27, *Table VIII.*

Price.	Sales to			Gross Receipts.	Total Cost.	Net Profit.
	Established Customers.	Marginal Buyers.	Both Combined.			
0·98	31,000	0	31,000	30,380	19,104·17	11,275·83
0·73	43,500	17,400	60,900	44,457	33,543·38	10,913·62

to fluctuate between the limits of 0·98 and 0·74. Although marginal buyers in this case constitute only one-sixth of the total, the range of price oscillation is almost as great as in the original problem, *i.e.* 0·24 as compared with 0·28.

The main virtues of Edgeworth's analysis, as the present writer sees them, are as follows :—

I. Edgeworth implicitly assumed that when a few are selling to many, only the sellers name prices. Buyers decide whether

to buy or not to buy—and if they buy, from whom and how much. Buyers have an indirect influence on prices but no direct voice. This general condition conforms with reality, as everyone knows, though economists have given it little attention.

II. Each duopolist in Edgeworth's market is at liberty to choose his own price. He is not forced to conform with the general action of the rest of the market as under unlimited competition. His price is not determined by competitive bidding among buyers as in an auction sale, or in Cournot's false theory.

III. Edgeworth broke away from the artificial assumption of an absolute one-price market. Looking beyond his work, taking into consideration certain additional elements of competition, we may still expect to find duopoly prices usually uniform; but the assumption that the prices of two competitors must always be equal is contrary to reality and common sense. This assumption is also a handicap in theoretical analysis, particularly that of intermediate pricing processes and alternative possibilities.

IV. Edgeworth's assumption that all buyers are marginal in their choices between competing products cannot be applied to many real situations, but it emphasises the fact that such buyers exist and the importance of their influence.

V. Edgeworth's theory is significant as a study in disequilibrium. That disequilibrium is perpetual need not be admitted, but disequilibrium is certainly recurrent. Edgeworth's analysis brings to light features of disequilibrium and reasons for disequilibrium not recognised elsewhere.

In certain particulars this article is a defence of Edgeworth, but total acceptance of his theory is by no means advocated. It is subject to the following faults :—

I. The general results do not conform with reality. Duopolists are not observed to engage in perpetual price wars. Duopoly prices are no more chaotic than other prices. It is no wonder that some economists have turned from Edgeworth back to Cournot. Despite the unreality of the process Cournot described, Cournot's general conclusions have the semblance of reality.

II. Edgeworth created the general impression that nothing definite could be known about competition among the few. Strangely enough, this impression discouraged detailed study of his own work. Economists unable to accept Edgeworth's conclusions have struck out in quite different directions, and have not been encouraged to utilise the results of his own pioneering.

III. According to Edgeworth competitors consider profits

only of the immediate present, and not over a period of time. The latter goal is much more sensible.

IV. In actual business buyers do not immediately transfer their patronage from one seller to another because of a difference in price. It takes time for the difference in price to become known; it takes time for buyers to change their buying habits. Thus, although a price difference continued for a considerable length of time may bring about a decided shift in patronage, the immediate advantage gained by one seller in cutting his price is not nearly so great as in Edgeworth's simplified market.

V. An Edgeworthian duopolist does not realise that by cutting his own price he prompts his rival to cut also. As a result, both are worse off than in the beginning. More far-sighted competition has been analysed by Professor Chamberlin.

VI. Edgeworth totally ignored the effect of unstable prices on the original demand situation. In conformity with his approach it has been tacitly assumed in the body of this article that general and individual demand schedules remain unaffected by constant variation in price. As a matter of fact, most buyers, observing the price of an article to fluctuate, postpone part of their purchases when the price rises, and wait for it to fall. Thus price oscillation distorts demand, and the distortion of demand in turn tends to eliminate price oscillation. If Edgeworth's sellers, however, are totally lacking in foresight, so also are his buyers.

On the whole Edgeworth's theory is a brilliant mixture of truth and falsity, but those who ignore or deny him are likely to fall into errors themselves.

A. J. NICHOL

Duke and Yale Universities.

RETURN TO CAPITAL INVESTED IN THE WITWATERSRAND GOLD-MINING INDUSTRY, 1887–1932

In 1923 the late Professor R. A. Lehfeldt read a paper before the Chemical, Metallurgical and Mining Society of South Africa,[1] in which he presented the results of an attempt to " work out the precise result over a certain period " of the amount of the profits made by mining gold on the Witwatersrand. Dr. Lehfeldt, in the paper incorporating his results, rightly wrote that " the amount of the profits made by mining gold on the Witwatersrand is a matter of great importance to South Africa, and is of considerable economic interest to the world; but it is one on which there is very little information to be had, and so, naturally, very contradictory opinions have been held."

The paucity of available information led Dr. Lehfeldt to restrict his calculation to the period 30th June, 1907, to 31st December, 1921, that is, to the operation of the gold-mining industry " within a period after the mining field had become well established." The method adopted by Dr. Lehfeldt " was to suppose an investor, who, on the 30th June, 1907, bought all the shares in the Witwatersrand mines at the market price, who subsequently supplied all the new capital that was supplied, received all the dividends and repayments, and sold out his interest at the market price on 31st December, 1921. What return would the imaginary investor have got on his money? "

During the last four years the writer of this article has been conducting certain investigations in the Department of Economics and Economic History of the University of the Witwatersrand, directed towards examining the financing and economic structure of the Witwatersrand gold mines, the supply of capital to this industry, and its profitability. In the course of these investigations, an attempt has also been made to carry out a fuller analysis of the return to capital invested in the Witwatersrand than the late Dr. Lehfeldt was able to undertake with the relatively incomplete information at his disposal.

In this attempt an endeavour has been made to calculate the exact amount of capital invested in the industry from its

[1] *The Journal of the Chemical, Metallurgical and Mining Society of South Africa*, January 1923.

inception in 1887 up to and including the year 1932, and the total dividends and repayments of capital over the same period.

For this purpose an index was first constructed of every mining company existing on the Witwatersrand of which any record at all was available. There were 900 companies in this preliminary index. Those which were found to have conducted mining operations, or which definitely spent capital funds in order to further potential mining enterprise, were further examined. Every possible source of information was tapped in order to reconstruct their financial history.

For this purpose the actual published accounts of every mining company, for which adequate records were available, were tabulated annually and all the relevant data of nominal capital, issued capital, shares issued to vendors, shares issued for cash, premiums on working capital shares, loans, debentures, working expenditure, working and other revenue, working profits, funds appropriated from profits for further capital expenditure, dividends and repayments of capital, etc., were tabulated annually. The annual data was recorded in such a form that a balanced account was obtained of the financial operations of each company for every year from the date of its registration to the date of its liquidation (including the liquidation accounts), or to December 1932 if the company was then still in existence.

It should be noted that, not only were changes recorded as they occurred, but that the progressive figures were also agreed and reconciled with the annual accounts—thus ensuring an automatic check on the whole of the work done.

Mention may be made of the fact that mine accounting methods have not been uniform over the whole period covered by the investigation (particularly in the earlier years), with the result that adjustments had to be made in the course of the tabulation.

Of the 900 companies in the preliminary index, 736 are accounted for in this investigation. The accounts of these companies were either tabulated or rejected owing to the information available being so unreliable that they could not be dealt with. The remaining 164 companies were excluded on the ground that they did not fall within the scope of the investigation, as they were found to consist of land, estate, financial and investment companies.

Of the 736 companies, 160 were rejected owing to lack of information. In these cases it was impossible even to ascertain details of the distribution of the capital as between vendors

interests and working capital shares, or to distinguish between the nominal and issued capital. The following table gives a summary of the position in relation to the mines which had to be rejected (Table I).

TABLE I

Summary of Mines not *Tabulated*

	Number of Companies.	Nominal Capital.	Issued Capital.
(*a*) Nominal Capital known but no other information . . .	126	£4,253,945	Unknown
(*b*) Nominal and Issued Capital known —no other information . .	13	£689,593	£484,714
(*c*) No information available . .	21	Unknown	Unknown
Totals	139	£4,943,538	—

The table shows that the total nominal capital of the 139 companies amounted to £4,943,538. Even assuming that all the nominal capital was issued it will be seen that the amount is very small as compared with the total capital invested in the industry (that is, the total issued capital including vendors' shares, working capital shares plus premiums on the latter), which amounted, during the period covered by the investigation, to £149,275,270 excluding the rejected companies, and to £154,118,808 including the rejected companies and assuming that the nominal capital of these companies was all issued. There is no need to include a provision for premiums in the case of these 160 companies, as they were nearly all small concerns which existed in the very early years of the industry and the capital was rarely issued at a premium. The average nominal capital of these concerns was only about £30,000.

The rejected companies account for about 3 per cent. of the total capital invested in the industry from 1887 to 1932, assuming again that all the nominal capital of these companies was issued and including this capital in the total capitalisation of the industry. On the same basis it is found that 97 per cent. of the capital invested in the industry was accounted for, tabulated and subjected to analysis in this investigation.

Bearing in mind the long period covered by the investigation, this can be regarded as indicating that the study constitutes a relatively very complete survey of the finances of the gold-mining industry for the forty-five years under consideration.

A special analysis was conducted in the case of all amalgamations and reconstructions of companies in order to arrive at the exact financial changes involved.

The greater part of the investigation is based on accounting records, which are, for all practical purposes, complete. In those cases where complete accounting records were not available in the form of annual company reports, the information was supplemented from a large number of authoritative sources. The supplementary information necessary was obtained from the Office of the Registrar of Companies, from the Office of the Registrar of Mining Titles, from the original statutory returns supplied to the Government Mining Engineer, from the published records in mining journals, and from publications such as Goldmann's *The Witwatersrand Gold Fields*, Goldmann's *South African Mining and Finance*, and Skinner's *Mining Manual*.

Of the 576 mining companies with which the investigation deals, 206 companies were amalgamated, 313 were wound up, and 57 were still in existence on 31st December, 1932.

Various methods of calculating the actual yield from the tabulated data have been tried. Finally, it was decided, for the purposes of this estimate, to adopt the mathematical method used by Dr. Lehfeldt, in a form suited to the data used in this study. The method has been described by Dr. Lehfeldt as follows :—" The average yield is, then, such a rate of interest that all the outgoings, accumulated at that rate, to a given date, will balance the income, similarly accumulated." [1]

Since the following calculation was completed, Professor H. Knight has published a most valuable analysis entitled " Capital, Time and the Interest Rate " (*Economica*, August 1934). In my opinion the calculation of yield to capital in the gold-mining industry and the method used illustrate practically some of the important theoretical concepts developed by Professor Knight. In particular, attention should be drawn to his statement on the essential relations between capital and income. His view (*loc. cit.*, pp. 260, 261) is identical with the one on which my calculations were based.

The calculation was made for three different series of data as follows :

[1] If the payment q (+ ve or − ve) be made at time t previous to the chosen date, the rate of interest, per unit i, per cent., is given by the condition that

$$\sum_{r=1}^{r=n} q_r \left(1 + \frac{i}{100}\right)^{t_r} = 0.$$

(1) Equating the total accumulated dividends and repayments of capital (incomings) with the total accumulated outgoings—the outgoings comprising (*a*) shares issued to the original vendors, valued at par, *plus* (*b*) shares issued for cash, and cash received from premiums on shares so issued.

(2) Equating the total accumulated dividends and repayments of capital (incomings) with the total accumulated outgoings—the outgoings comprising (*a*) shares issued to the original vendors, valued at the price at which working capital shares (*i.e.* shares issued for cash), if any, were issued simultaneously. Where no such simultaneous issue took place, the shares issued to the original vendors were valued at par; [1] *plus* (*b*) shares issued for cash, and cash received from premiums on shares so issued.

(3) Equating the total accumulated dividends and repayments of capital (incomings) with the total accumulated outgoings—the outgoings comprising the total working capital shares only (that is, shares issued for cash), *plus* cash premiums received on such working capital shares, and excluding any vendors' shares whatsoever.[2]

The actual results of the respective calculations are given below. It should be noted that the method of calculation adopted was, in the first instance, to choose arbitrarily an anticipated rate of yield, and all the outgoings and incomings were accumulated at this rate. The actual yield was thus obtained by the actuarial method of "trial and error."

[1] This is the basis adopted by the British Income Tax authorities, viz. to value vendors' shares at the issued price of the working capital shares issued at the same time as and ranking equally with the vendors' shares. *See* Transvaal Chamber of Mines' Evidence to the Mining Industry Arbitration Board, 1927.

[2] Method (3) has been used merely as an illustration of the yield if the arbitrary assumption is made that all the profits were made available to the subscribers of the working capital, and that the mining ground and any other property for which vendors' shares were issued was, in fact, made available without cost to the subscribers of the working capital shares (plus cash premiums thereon). Great caution must be exercised in drawing conclusions from this arbitrary calculation. The question of the correct valuation of vendors' interests is very difficult. The vendors' interests in particular mines are often too high (as the subsequent history of the mines shows), but in other cases they are too low. On the average they should tend to approximate to the "present value" of the discounted future "rent" yielded by the minerals in the ground. As Professor Knight says: "(3) On the cost side (ascending phase), the direct outlays incurred will practically always include a proportion, which may be small or large, of payments to pre-existing 'capital items.' These, of course, may take the form of 'rent' in the ordinary business sense, a payment to the owner of a concrete instrument for its use, or of 'interest,' paid for the use of 'capital,' a sum of abstract value" (p. 261).

The final results were as follows:

(1) At 4¾ per cent. Outgoings	£659,524,000
Incomings	£595,681,000
Plus Stock Exchange valuation at 30/11/32 of mining companies in existence in December 1932	75,000,000
	£670,681,000
At 5 per cent. Outgoings	£715,701,000
Incomings	£626,244,000
Plus Stock Exchange valuation at 30/11/32 of mining companies in existence in December 1932	75,000,000
	£701,244,000

By interpolation the yield is found to be 4·9 per cent.

(2) At 4 per cent. Outgoings	£575,523,000
Incomings	£514,097,000
Plus Stock Exchange valuation at 30/11/32 of mining companies in existence in December 1932	75,000,000
	£589,097,000
At 4¼ per cent. Outgoings	£624,003,000
Incomings	£539,230,000
Plus Stock Exchange valuation at 30/11/32 of mining companies in existence in December 1932	75,000,000
	£614,230,000

By interpolation the yield is found to be 4·1 per cent.

(3) At 10½ per cent. Outgoings	£2,206,265,000
Incomings	£2,134,631,000
Plus Stock Exchange valuation at 30/11/32 of mining companies in existence in December 1932	75,000,000
	£2,209,631,000

By interpolation the yield is found to be 10·5 per cent.

It will be noted that the above calculations have in each case included an amount of £75,000,000 which is the market valuation in November 1932 of the mines in existence in December 1932. This figure was taken in order to obviate a serious difficulty inherent in the investigation, which is the valuation of the existing assets of the mines at the end of the period covered by the study. Probably the most accurate method would be that which would give the exact amount of the capital invested in the mines (after deducting depreciation), that is, the unamortised capital in the accounting sense. It is impossible to obtain this

accounting figure owing to the well-known reason that the accounting procedure of the mines does not provide this information.[1] (There are no depreciation reserves in gold-mining accounts as in those of industrial companies. It is important to note, however, that " plant " and " machinery " are, of course, constantly " maintained " and " replaced " by appropriations from revenue or by debiting working expenses.) The Stock Exchange valuation has the disadvantage that it automatically includes the " present value " of the future dividends computed at the current rate of return expected by investors in this type of investment at the date of valuation, assuming due provision for the redemption of capital invested having been taken into account by the investor.

There is no reason, however, to believe that the £75,000,000 Stock Exchange valuation understates the " real " amount of the unamortised capital of the existing mines at the end of 1932. November 1932 was chosen as this was prior to the influence on the valuation of existing mines exerted by the Union departing from the gold standard.

Another procedure was adopted to avoid the difficulty mentioned above. The assumption was made that the par value of the capital of the mines in 1932 could be assumed to be intact.[2] This figure takes no account of the premiums or other funds used for capital expenditure, the non-inclusion of which is assumed to set off the depreciation of capital which has occurred. It is significant that if the sum of £45,000,000 is taken instead of the £75,000,000 Stock Exchange valuation the results are as follows :—

Method (1) . . .	4·5%
Method (2) . . .	3·8%
Method (3) . . .	10·3%

The theoretical problem involved here is, of course, the crux of the matter. The " unamortised " capital intact in the industry at any arbitrary point of time cannot really be " valued " without assuming (and therefore " discounting ") its future income yield. Theoretically if the industry is assumed to close down at a given moment (in this calculation December 31st, 1932), account should

[1] The South African Income Tax procedure includes a " capital amortisation " allowance in the taxation of gold mines, but this figure is not published, and, even if it were available, would not reflect the real amount of depreciation of all capital invested.

[2] *I.e.* the total issued capital (working capital plus vendors') as recorded in the balance sheets of the mining companies existing in December 1932.

be taken of a " residual " or " salvage " value which, as Professor Knight expresses it (see Knight, *loc. cit.*, p. 263), " can be carried over into an account with some other instrument, or into the general capital account of the owner." Actually, however, unless the capital is so carried over there is no means of valuing it. For practical purposes the break-up value of the capital remaining in gold mines which close down is relatively negligible. The " intact " capital only has value in so far as it is assumed that it can be utilised in producing income in the future. The Stock Exchange valuation may include errors leading to over-valuation or under-valuation (present value) of the future income. The estimate, of £45,000,000 is arbitrary and was taken merely to illustrate the influence on the yield when a considerably lower valuation of " intact " capital is assumed.

As regards the revaluation of vendors' shares when issued, at prices other than the par value of such shares, in accordance with the method explained earlier in this article, it should be borne in mind that only a part of the total vendors' shares issued were so revalued, since working capital shares were not by any means always issued simultaneously with the vendors' shares.

The above method of calculation was also applied to the mines in existence in 1932.[1] The results are as follows (A with £75,000,000; B with £45,000,000):

	A	B
Method (1) . . .	6·8%	6·0%
Method (2) . . .	6·0%	5·6%
Method (3) . . .	11·9%	11·7%

Table A in this article gives a summary analysis of the total capital and other funds invested and dividends and interest thereon from the inception of the gold-mining industry in 1887 to 1932.

It is not possible in this article to pursue the many theoretical implications of these results, particularly from the point of view of the light they throw on the nature of long-term fixed capital and the yield thereon, the adequacy of the existing methods by which such long-term capital is invested, and the factors affecting the supply of long-term capital for speculative purposes.

A considerable number of detailed analyses of the statistics

[1] This selected group of mines, representing as it does the " survivors," really shows the yield on capital invested in the relatively " successful " gold-mining enterprises—only a few mines of importance which had been successful had closed down prior to 1933.

are now being made. The results of these will make possible a final analysis of the theoretical implications of the investigation.

TABLE A

The Witwatersrand Gold Mining Industry, 1887–1932

Summary of Capitalisation of Companies wound up Prior to 31st December, 1932, and Companies in Existence 31st December, 1932.

	Companies wound up prior to 31st December, 1932.	Companies in existence 31st December, 1932.	Total all Companies.
1. SHARE CAPITAL :			
(*a*) Shares issued to Original Vendors of Mining ground :			
(i) "Par" Value of Shares issued .	£ 26,769,159	£ 26,265,962	£ 53,035,121
(ii) "Revaluation" of Shares issued .	32,115,393	37,441,349	69,556,742
(*b*) Shares issued for Cash including Premiums :	29,271,738	66,968,411	96,240,149
2. TOTAL "SHARE" CAPITALISATION :			
(*a*) "Par" value of Shares issued to Vendors (Item 1 (*a*) (i) plus Shares issued for Cash (Item 1 (*b*)) .	56,040,897	93,234,373	149,275,270
(*b*) "Revaluation" of Shares issued to Vendors (Item 1 (*a*) (ii) plus Shares issued for Cash (Item 1 (*b*)) .	61,387,131	104,409,760	165,796,891
3. DEBENTURES UNREDEEMED .	1,110,560	486,710	1,597,270
4. UNPAID LOANS. . . .	1,097,987	1,414,503	2,512,490
5. APPROPRIATIONS FROM REVENUE	12,336,264	50,728,217	63,064,481
6. OTHER FUNDS	—	329,403	329,403
7. GRAND TOTAL CAPITALISATION :			
(*a*) On basis of "*Par*" value of Shares issued to Vendors	70,585,708	146,193,206	216,778,914
(*b*) On basis of "*Revaluation*" of Shares issued to Vendors	75,931,942	157,368,593	233,300,535
8. TOTAL CASH INVESTED . .	43,816,549	119,927,244	163,743,793

It is worth drawing attention, however, to three of the factors which account for the final estimates of yield given above. These are :—

(1) The very long period of time that elapses between the flotation of mining companies (and the investment of capital in them) and the payment of the first dividend.[1]

[1] Cf. Knight, *loc. cit.* : "The longer the construction period of a given capital good, for the same investment of the services of other agencies, the greater will be the total investment after adding the accumulated carrying charge, and the greater must be the imputed income, for a given service-life or in perpetuity, in order to provide a given rate of return. . . ." (p. 267).

(2) The very large influence of world economic factors (quite apart from local South African factors) which affect the supply of capital for gold mining and which lead to the temporary closing down of developing or producing mines owing to the impossibility of raising further capital for the time being.

(3) The considerable amount of capital that is lost entirely owing to the failure to locate gold in payable quantities, or owing to inadequate methods of finance.[1]

S. HERBERT FRANKEL

University of the Witwatersrand, Johannesburg.

October 1934.

[1] In conclusion it will be useful to quote the result obtained by Professor Lehfeldt in his calculations. He arrived at a yield of 6·20 per cent. using a method not very different from that of Method (1) in the above calculations. Professor Lehfeldt also expressed the following opinion on the result:—"The yield of the mines is certainly not a high one, considering the erratic nature of the investment, some companies being very rich and others failures; it is necessary to distribute investment over a considerable number of mines to feel any confidence in the average return. Actually mining shares are usually dealt with on the Stock Exchanges on a basis of something like 10 per cent. yield, and investments in real estate and industrial companies in South Africa probably bring in nearly as much."

PROFESSOR HAYEK AND THE THEORY OF INVESTMENT

In the remarks which follow, I am not concerned with the technical problems of the "structure of investment" actually discussed in Professor Hayek's recent article,[1] and shall take no notice of what may be right or wrong in that connection. I am concerned rather with the fact that the article pretends to do something far more fundamental, but which, as I think, cannot be done. The author asserts (page 208, note 2) that his paper contains implicitly the answers to objections recently made to the Austrian theory of capital, and names among other references a paper of mine published in the volume of *Ekonomič Essays in Honour of Gustav Cassel*. In this connection, he asserts or assumes, on the average of at least once to a page, that he has proved, or is proving, or that it is self-evident and requires no proof, that a change in the amount of capital in society is identical with a change in the "investment structure," an increase corresponding to a lengthening, and a decrease to a shortening, of that structure (cf. p. 211, especially footnote 2; p. 231, etc.). And increase of investment is further identified, if not quite so clearly and emphatically, with a lengthening of the production process or production period, the interval between the time when "labour" is performed and the time when its product is consumed (*e.g.* pp. 208, 209, 223).

If, however, this theory, or either part of it, is anywhere argued, or any reason given for believing it, I have not been able to locate the passage in question. Indeed, on page 225, just preceding another assertion of the point at issue, there is a statement which is very nearly a direct "give-away." It reads: "More goods (or, where possible, more durable goods) of the kind will be produced. . . ." It should be apparent that as regards a relation between capital quantity and investment structure the essential issue lies in the difference between constructing more goods and constructing more durable goods (in response to a fall in the interest rate); also that Professor Hayek is bound to maintain (*a*) that the sole effect would be the substitution of more

[1] "The Relationship between Investment and Output," Economic Journal, June, 1934.

durable for less durable goods (not that this is a contingent possibility, as indicated by the parenthesis); and (*b*) that this change lengthens the interval between production and consumption.

If the question were considered at all, it would surely be immediately evident that in neither of the two senses discussed by Professor Hayek does the investment of more capital necessarily involve, still less is it equivalent to, a lengthening of the time structure of investment—and *still* less to a lengthening of the production process. Moreover, there is no production process of determinate length, other than zero, or "all history." New investment may or may not involve either (*a*) an increase in the average durability of the goods involved in economic activity, or (*b*) an increase in the average construction period for such goods. It is to be assumed that, other things being equal, an increase in investment would involve both an increase in the amount of goods of the same kind and the construction of new kinds (see quotation above from Hayek, p. 225) according to what happened to be most *profitable*. "Possibility" is not in question, as generally in economic matters. More goods of the same kind would mean no permanent change in either investment function or output function, as defined by Professor Hayek, and new kinds would mean changes in both directions nearly at random, as regards both period of construction and durability.

It is true that there is a partial, *temporary* exception, in connection with an expansion of production not associated with any change in the composition of the product or in technology. If such an expansion takes place in perfectly rational order, there will be, *temporarily* (while the expansion is taking place, but not after it is completed), a slight increase in the proportion of goods in the earlier stages of processing operations, in comparison with later stages. It is to be noted, too, that there is little rigour in the complementary relationships between goods representing different stages of a given process, that *inventories* play a large *and flexible* rôle at every stage.

There is also a presumption, though no necessity, that both the average construction period and the average durability of wealth items will increase somewhat, though in no determinate degree, with an increase in the proportions of wealth to (labour and to) total income in a society. The reason is that, on the one hand, increased durability is *one way* of investing more capital and securing more income (because the annual deduction from gross yield for depreciation is reduced); and, on the other hand, interest during construction is one element in cost, and would probably

increase along with other costs; and especially, a reduction in the cost per unit of time, through a lower interest rate, might well lead to an increase in the time. In both cases the particular element of time is one among a practically infinite number of variables, and the relative importance of the effects in question in the total of effects will be measured by a corresponding fraction. It is presumed, too, that any increased use of capital will find its expression in part in the making of altogether new products, and the time relations in this connection are entirely unpredictable.

For the general theory of capital, and for appraising Professor Hayek's claim mentioned above that he has met the objections to his theory, to which he makes reference (notably those of the present writer), the question is whether increasing the amount of capital invested lengthens the production process, rather than what is its effect on the investment structure. This general theory of capital is, of course, that promulgated by Böhm-Bawerk and his followers and generally accepted and taught in the past generation.

On the face of it, there must be plausible reasons for holding that the use of more capital is equivalent to the use of more time in production; otherwise the doctrine would not have been so generally expounded and believed. It unquestionably requires time to construct capital goods, and since these are subsequently used in processes requiring time, to make a product, and are more or less typically used up, it is natural to consider their production and use as an indirect in place of a direct application of the productive capacity going into them, and to consider the time involved in their creation, during which no final product is forthcoming, as added to that of their use to form a total production period for the final product. Reasonableness is harder to discover in the doctrine that labour produces capital in any sense not just as valid reciprocally, but this also is generally accepted by many of the best economists.

A brief statement of the reasoning which shows this entire procedure to be false may start from the personal statement that I myself completely accepted it for years, taught it in class lectures and expounded it in text materials manifolded for student reading, and of course it was never questioned by the "innocents" who were the victims.[1] Realisation that the whole argument is

[1] The theory of profit developed in my book on Risk and Uncertainty rests upon the general view of the entrepreneur or business unit buying productive services "now" and selling the products in the future, and the theory needs to be entirely reworked. Profit must be computed with respect to some definable

fundamentally wrong came through working over the meaning of the wage-fund theory, particularly as expounded by Smith, in relation to Böhm-Bawerk's defence in the last few pages of the *Positive Theory* against the self-accusation of being a wage-fund theorist. Let us glance at this original form of the theory.

Here, neglecting "land," it was argued that the capital produced in one year, thought of as food and other provisions for the use of labourers, supports the same amount of labour the next year, while the original capital is being reproduced. There is here, in the first place, a real and definite "cycle." Moreover, if in such an agricultural situation some crops are biennial or require several years to produce, their value will be increased accordingly by accumulated interest. And it is evident that if plants requiring more years to mature are to be substituted for others growing in a shorter period, a greater accumulation of the final product will be necessary to initiate and to support the operations (two different matters!), and the yield of the more slowly maturing crop will have to be greater to induce men to make the change of introducing it. This is undoubtedly the logic of the Böhm-Bawerk theory, which further assumes that the construction and using up of auxiliary instruments such as tools and machinery is equivalent in principle to the alternate production and consumption of supplies for the use of labourers. But such a production period explanation of capital is reasonably sound only with reference to assumptions which are almost entirely false

basis, either a dated interval of time, or a particular item of product, or to a project or venture somehow defined. It is, of course, the first of these which is actually and in general necessarily adopted. In any case, the essentials work out in the same way. The *crucial* element in the profit problem in a society in which capital is employed has to do with asset values. It is a question of (expenditures and receipts and of) the relative value of assets at the beginning and the end of the accounting period. For any basis other than a time interval, the elements will be (direct charges and credits to a particular account, together with) any and all effects upon asset values which can be attributed to the project or entity with which the account in question is kept.

The main point for emphasis is that the outlays and returns compared to determine profit are not separated by any time interval, but belong to the same accounting period, however short it may be. For any outlay in business or production the corresponding return is not in the future, but contemporary. Time and uncertainty enter into profit in a different way altogether—namely, through the capital account, or specifically, through inventories and depreciation. But capital itself is always a matter of anticipation to the infinite future. Of course the concrete anticipation may relate to capital value at a future date rather than to perpetual income, and the capital may at various times and to a greater or less extent assume for the individual owner the particular form of money; but neither fact affects its character of a perpetual anticipation. This comes to be limited only if business in the entire system is conducted on the anticipation of a universal disinvestment.

to the facts of modern industrial life, and cases which it reasonably fits are obviously special cases under other principles having general validity.

Even with reference to such primitive agricultural conditions the really critical student (such as hardly exists) might have had disturbing queries in connection with treating quantity of capital as a matter of length of production cycle. In fact, the quantity of the capital bears no simple or definite relation either to its durability or to any definable time interval. Taking population as given, raising *more* plants of the *same* growth period will also require more " stock," but *will not* affect the length of the cycle, while the *addition* to total production of new varieties of *shorter* growth, say yielding two harvests per year instead of one, will involve an increase in the capital, while *shortening* the average cycle. It will, moreover, require time to make the change in all these cases, but additional capital is involved in very different ways for lengthening the cycle and for increasing production without this lengthening, and the transitional relations are different from those of the new routine when established. In the third case, which is intrinsically as probable as the other two, production may be maintained with a shortened cycle, and capital released or production increased and the same amount of capital used. The fact that time is required for changing from any system to any other is confused with change in the length of the cycle itself, is one of the basic fallacies of the modern theory. It will be noted, too, that the service life of capital goods in the form of an annual crop of supplies for the support of labourers is not due to any intrinsic quality, but simply to the production period for a new crop. The amount of supplies which last one year is highly variable with the seasons, and will change (for a given population) with any change in productive efficiency and living standards (leaving the cycle unaffected).

The crux of the wage fund situation is first that the capital, while constant in amount, passes by investment and disinvestment through a real and regular physical cycle; and second, that it could be said to be produced by labour, if capital constituted support for labour at a fixed level (as the classical economists always really assumed),[1] or if, at least, variation in the level of

[1] This involves rejection of the wage-fund doctrine as a theory of *wages*. The wage theory of the classical system was an " absolute " standard of living theory. Its basis was the assumption that the employer (miscalled capitalist) gives the labourer some fixed amount (not fraction) of the product, which is necessary to enable him to live and work, or perhaps a merely conventional payment, in any case one determined in some absolute manner, unrelated to competitive bidding

support or standard of living for labour were not associated with any variation in the output of the combination. In fact, however, labour is also produced as well as "maintained" by capital (if there is any difference), and there is no real priority either way, even if we go back to the historical beginning of economic life.

It is only under the arbitrary and absurd assumption that capital is eaten up at a fixed rate (such as the fixed scale of support for labour) that there is any correspondence between a quantity of capital and the length of a productive cycle. Under competitive conditions, where alone quantity of capital is at all definite, the quantity is the capitalised perpetual net income of any capital good (after full maintenance, including replacements) and is *also* its cost [1] of production, which includes a capital charge. Thus both these magnitudes involve a rate of return, which is "determined" by their equality. In determining both construction cost and service life, time is one factor or dimension among a practically infinite number, and quantity of capital may and does vary quite independently of either of these time intervals. *Caeteris paribus*, it of course increases with either, according to the compound interest formula.

It is if possible even more fatal to a production period theory of capital that no such period can be defined under modern conditions, either before, or after, or during an increased application of capital. The sum of the construction period and service life averaged for individual capital instruments is neither determinate in itself nor significant for theory. Even in 1776, provisions for

among purchasers of labour, and hence unrelated to product value. Only in such a way could a residual theory of the capital share be given foundation. The "system," then, was this: First, land gets its differential or residual product. If this is stated so as to make any sense at all, it means a marginal-productivity theory for labour-plus-capital, and the residuum is easily seen to be identical with the marginal product of the land itself. Second, labour gets what it "has to have." And third, capital gets the final residuum. And this nonsense passed for an economic theory of distribution for a century, until Jevons and Menger demoralised it without seeing much as to how a real distribution theory was to be built. This achievement had to wait at least two more decades, or until Wieser, Hobson, J. B. Clark, and especially Wicksteed, gropingly indicated the circularity and symmetry of the relations. If economists had known the rudiments of analysis as put in shape by Leibniz, Newton and others a generation before Adam Smith was born, the history could have been more pleasant to look back upon. But the only theory which makes sense at all is still rejected by a large fraction of the teachers of economics, as well as indignantly by labour leaders and reformers; and it is not in the least degree understood by either the men who manage business or those who make laws, most of whom still believe that labour alone is really productive.

[1] More generally, where conditions are not stationary, the estimated cost, discounted for uncertainty, of any new item yielding the same net perpetual income.

the support of labourers—reproduced by labour, or by labour and land or even labour, land and capital—annually or in any other definite period, was only a part of capital. And even for a strictly interpreted wage fund it is arbitrary to call any point in the cycle a beginning or an end; it is a hen-and-egg sequence. Under modern conditions there simply is no cycle. It cannot now escape observation that " capital " is an integrated, organic conception, and the notion that the investment in a particular instrument comes back periodically in the form of product, giving the owner freedom to choose whether he will re-invest or not, is largely a fiction and a delusion. To show this conclusively it should suffice to mention the case of a part of a machine. The part cannot be liquidated without liquidating the machine. And the machine as a unit is in a similar sense a " part " of an integrated productive organisation which is not bounded by the scope of " plant " or firm, but extends outward indefinitely to indeterminate limits. Moreover, the capital structure and every unit in it is typically planned to perpetuate itself, and not for liquidation.

The animus underlying Smith's theory of capital was plainly the downright fear that the owners of capital might eat it up without replacement. (And this is, if possible, even clearer in Mill.) There never were serious grounds for such a fear, though the difference and even opposition between the two interests, of maximising consumption and providing for the future, ought to be stressed. But under modern conditions the possibilities of liquidation without serious loss are very limited, and the possible scope and speed of liquidation are only remotely related to the normal durability of the physical thing (or other " condition ") in which any increment of capital is invested. In a stationary or progressive society, small increments are indeed liquidated from the standpoint of the individual owner (consumed); but no real liquidation from an aggregate viewpoint is typically involved in the process, and real liquidation, into consumption, is hardly in question. The individual owner desirous of consuming any increment of capital naturally sells out at full value (for future production, above maintenance including replacement) to some other owner, and the productive organisation is not affected. In connection with the business cycle, and the depression problem in particular, the liquidation which is at issue is almost entirely conversion into *money*, not into current consumption. Failure of physical maintenance sometimes results from the helplessness of owners, and is connected with the unexpected loss of earning power consequent upon economic disorganisation. This con-

fusion between real liquidation and pecuniary liquidation, or saleability—which is not liquidation at all—needs fuller consideration. By way of preparation, it is needful to pass in more systematic review some of the essential facts in the problem of capital.

1. The most important fact requiring clarification is the nature of capital *maintenance*. This topic is a detail under a general consideration which is the source of much confusion in economic analysis—namely, the necessity of a clear distinction between stationary conditions and growth (increased provision for want-satisfaction for a given population). In a society which is maintaining or increasing its capital (per capita), all production of capital goods axiomatically represents either replacement or growth. (The situation in a retrograde society would have to be considered separately, but involves little change in the reasoning.)

No rational analysis of economic process is possible without making a sharp distinction between the "production" of "plant"—meaning *new or additional* plant (and properly including both the material and the human elements) and production in the sense of using plant to produce output. Use of plant in the production of the output (of *services*) consumed in any time interval must include the maintenance of plant, and this may involve replacement of particular items of plant. Obviously, if the plant "used up" in any interval is not maintained, the consumption of that interval is to a corresponding degree not produced in the interval, but represents the eating up of resources existing at its beginning (a process of disinvestment). The least experience with, or knowledge of, accounting must certainly make this clear, but it should be self-evident without even that elementary preparation.

Obviously, too, "replacement" of any concrete item of plant is, as already suggested, an accidental, technical detail in maintenance. What we call an item of capital itself is largely arbitrary. If any item is replaced bit by bit, the operation is correctly seen to represent routine maintenance, and the distribution of replacement through time does not change its theoretical character. The only reason for ever taking notice of replacement is to effect uniform distribution of cost and return from the standpoint of a particular business unit. If the construction period is comparable to the service life, the technical activity itself is necessarily distributed. Many plant items last indefinitely without any maintenance expenditure distinguishable from the costs of

operation or use of the items in question; another large fraction lasts indefinitely under purely routine maintenance, such as oiling, painting, cleaning and the like; another large fraction is permanent except for replacement of particular parts, which may be an insignificant fraction of the entire item; a fourth fraction is replaced piecemeal, as already suggested, with no particular date of superannuation (and in reality this category includes all replacement of material things); finally, a very large fraction has no natural or physical limitation of life, but may or may not pass out of use through supersession, in connection with technical and other changes involved in social evolution. Analytically, not only is all reproduction of wealth items (capital goods) included in the category of maintenance, but maintenance itself is only for special reasons, if at all, to be distinguished from other forms of "operating expense" which represent the division of joint product with the other agencies, physical and human, co-operating in production with the item in question. An analytically correct designation for new investment or disinvestment, from the aggregate standpoint, would be over- and under-maintenance respectively.

The consumable output of any "plant" or other productive organisation in any time interval, however short, assuming full maintenance, *i.e.* no disinvestment, is produced in that interval. Production in the sense of utilisation of a given plant and consumption of the product are simultaneous, and the "period of production" of consumed output is zero. The time required to put any particular unit of material through any physical process has nothing to do with the case, since it is a part of the production of any portion of output to maintain the plant involved, in its original condition; and plant maintenance includes replacements. This applies alike to materials which render final services, or are said to be "consumed," to raw materials, and to "auxiliary" goods, machines, tools and the like, which contribute to any quantity of output and which the consumer never sees.[1]

[1] The basic fallacy of the Böhm-Bawerk theory of capital is a twofold one which has vitiated the entire theoretical system of classical economics. Production is viewed as production of wealth, and wealth is viewed as concrete things. In reality, what is produced, *and consumed*, is services. The production of any service includes the maintenance of things used in the process, and this includes *re*production of any which are used up. Apart from such reproduction, really a detail of maintenance, things are "produced" only when added to a total stock. (This was seen by Mill, to the confusion of his definition of production—*i.e.* of productive labour—which refused to include services. See *Principles*, Ashley edition, p. 49.) Moreover, the creation of an addition to wealth is production only in an accounting sense; for there is no corresponding consumption, either

On the other hand—in contrast with production as the correlate of consumption—the creation of any addition to plant is, at least "theoretically" (meaning in so far as correct accounting is possible), a process having a definite beginning and end, and hence occupying a definite time interval. The time required to produce the entire plant in use in any society at any time is simply its entire past history—or all history down to some antecedent date at which growth may have stopped. Regarding the social plant, however, some explanation is necessary as to the part to be *called* "capital," and the same explanation will make it clear that there can be no sound distinction between "primary" and "secondary" factors of production.

2. At any moment, or "as of" any particular date, and with reference to economic use and value, everything in existence which bears or represents productive capacity is without exception primary, *given*; viewed historically, all have been produced, in the economic process as a whole, extending down from the beginning of economic history. It is true that different items are in various degrees produced under "economic" conditions, *i.e.* by the use—in the case of creating new wealth, the investment—of existing resources on the basis of complete foreknowledge, and quantitative estimation in purely economic terms, of the results to accrue in the future from such investment. In "free" society, the human resources are presumably to a relatively minor extent produced under these conditions; and in the production of "property," including real estate, mineral workings, etc., rational foresight and the pecuniary motive control in varying degrees. It may be true that particular items are simply "found," without any planned economic expenditure; but such finding must be accidental, unanticipated, or the competitive struggle for the opportunity of finding will itself tend to involve an investment equal to value realised. (The moral significance or social pro-

in the same interval or at any future time, as long as the wealth (in any physical form) is used to *produce* consumed services.

Secondly, wealth, which is identical with capital, can be treated quantitatively only by viewing it as capacity to render service. A service is measured by its economic value (equal to relative marginal utility) and wealth by *capitalised* service value. Capitalisation is most naturally and realistically conceived as involving the transformation of all service-income from wealth which is not intrinsically permanent to a perpetuity basis by "depreciation." The quantity of wealth, or capital, in any item is the value of its net perpetual income, whether the life of the concrete item is zero or infinite or anything between. (Regarding the rate of capitalisation, see above, p. 82; also, the article "Interest" in the *Encyclopedia of the Social Sciences*, and an article in *Economica* for August 1934, referred to at the end of the present paper.)

ductivity of the investment is a separate issue.) The relation in production between various types of agencies is one of strictly mutual complementarity.

3. In "free" society, the creation of productive capacity in the form of human beings or human qualities is not *called* "investment," and the result is not *called* "capital." This usage is scientifically correct, because in free society human beings—the "things" bearing or embodying productive capacity in the form of "labour"—cannot be actually bought and sold, or their services mortgaged, or made the subject of an enforceable contract for a long period, and hence no definite money value can be placed upon them. They are not quantified and are not "wealth." The human being has no economic value to anyone but himself, and he has no reason for keeping a capital account with himself, even if it were possible to do so with any degree of accuracy. In connection with human beings, it is therefore impossible to distinguish among the three forms of consumption (*a*) for enjoyment and (*b*) for the purpose of maintaining productive capacity or (*c*) that of adding to the latter. All consumption directly by human beings, since it does not affect capital values in the marketable sense, has to be treated as ultimate consumption, even though we are well aware of the mixture of ends actually involved.[1]

4. Every new increment of investment, whatever physical or other form it may take, is added to an organised productive system. In fact, this is true in a doubly complex sense. In the first place, practically without exception, it will be added to some kind of more or less distinct primary technical production unit, a "plant" in the narrow sense (if not to a particular individual "machine"). But this individual plant will be technically interrelated with other plants, in both a "horizontal" and a "vertical" series. In the second place, any new increment of capital is the property of some owner, individual or corporate, and its rôle in production, and more especially in changes in production, will be profoundly affected by these ownership relations. In consequence, as noted above, the replacement of any physical item of equipment has in greater or less degree the character of replacing a part of a machine. The cost, yield, and value—*i.e.* the quantity—of an investment item or increment, reside largely in organic relationships, rather than in particular physical things or conditions.

[1] It is to be noted, however, that there is a form of capital, called "good will," which is created by investment, and owned and bought and sold, the real substance back of which is a state or attitude of human beings.

5. Enough has been said to make it clear that neither of the processes discussed by Professor Hayek in connection with the structure of investment (*i.e.* neither changes in the durability of goods nor changes in their construction period) exerts an identifiable effect on a definable " period of production " in society as a whole. Moreover, they are similarly unconnected with quantity of investment, and quantity of investment is likewise unconnected with any production period. Correspondences in this field are limited and accidental, without theoretical significance for the nature and rôle of capital. It is extremely difficult to give any intelligible meaning to a " period of production," and it certainly has no meaning of the sort assumed in the Böhm-Bawerk–Hayek theory of capital. The production period for consumed services, if the expression is to be used at all, is zero, while the production period for the capital equipment of society is all past economic history.

It is true that in production particular materials go through technical processes and exist in the form of particular named things for intervals which can be *more or less* definitely dated as to beginning and end. If a particular method of identifying and naming the things and dating the life termini of each could be agreed upon, and if the list itself remained unchanged, it would be possible to speak of a change in the average length of all such processes.[1] Both these assumptions are widely contrary to fact, and the period in question would have no meaning for economic analysis if determined. A practically indefinite number of " things," in every relation of simultaneity and succession, are involved in the production of any increment either of satisfaction or of wealth. There is also more or less used in business management discussions a notion of an average " turnover " of investment. This might be defined in several different ways and is not scientifically usable even for accounting purposes.[2] But none of these concepts is a genuine average, and none of them either corresponds to the Böhm-Bawerk conception of a production period, or has any significance for the theory of capital; none of them will at all necessarily increase in length with an increase in total investment.

If an account with a particular " thing " is set up and kept

[1] The mode of averaging would be restricted by the fact that items approach zero and infinity as limits.

[2] In the ECONOMIC JOURNAL for March 1934, Marschak very neatly shows that the conception of the production period, developed by Mr. Gifford (ECONOMIC JOURNAL, Dec. 1933) reduces to one of these possible turnover formulas, namely capital divided by total income—incidentally one of the least meaningful.

from the moment it begins to affect economic plans to the moment it ceases to do so, and even if the end of the interval really represents approximately complete liquidation into products already consumed—it is evident: First, that no assignment of a time interval can be made either (1) to the production and consumption of the increment of output consumed in any small increment of time, or (2) to the period of investment of the increment of resource services expended in any small increment of time. (Professor Hayek in effect admits this in his paper.) Second, it is also evident that if the capital-creation-and-use in question is profitable at all, the time required to produce the total amount of output yielded before final liquidation is probably *decreased* by the project. (If the product is unique this is true of its value.)

6. Exceptionally, if ever, strictly speaking, is real liquidation of a concrete item into consumed product in question, and only within fairly narrow limits is it possible. Where an enterprise as a whole is initially planned for liquidation (closing of its books) at a foreknown date, a part of the equipment used will be planned for the life of the enterprise, and another part not amenable to this treatment will be planned primarily for the largest possible recovery or "salvage" value. Even then, capital is typically invested in some other form as it is written off out of its gross yield. In general, capital investment is planned for perpetual maintenance, as capital, including any necessary replacement by items of some kind. Possibility of liquidation, and occasionally the fact, is important to an individual, but normally this means sale to a new owner. Mobility of investment is important both technically and economically; but the relation of construction period and service life to mobility constitutes two distinct problems (see below, section 8).

7. With reference to a new venture of any kind, which represents a net addition to capital—whether it is a new enterprise or plant, or a nominally distinct concrete device, an "improvement" in any existing item, the creation of good will, or whatever form it may take—the interval between the decision which is the starting point of the venture, marked by setting up an account with it, and the date when the result as a productive unit begins to operate at something like normal capacity, is more or less determinate. This is the construction period in the proper, accounting sense, for the item. It is a fallacy to treat this interval as a part of the production period for the output subsequently made by the aid of the capital produced. This might be reasonably done only if either (*a*) the entire future output of the investment

increment through all time is considered as a unit, or the investment is really liquidated and consumed, which implies a general net liquidation of the economic system. In any case, the entire social equipment in existence when the venture is started—accumulated through all past time—is included in the "primary factors" used indirectly through producing the new capital increment, which means that technically the production period is all past time. The fact that making an investment requires time no more adds to the production period for any subsequent product of any "unit" to which any increment of investment is added than does the fact that disinvestment (see next section) requires time mean that that time, if it could be determined, would be added to the production period for the subsequent output of society, or of any definable unit of capital from which the particular decrement is subtracted.

In any society which as a whole maintains its total capital quantitatively intact, all liquidation is in effect transfer of investment from one holder or one form to another holder or form, or both.[1] No particular item of investment once made and incorporated into the productive system of a social economy can ever be said to be liquidated at any particular time, and this would remain true if the end of the world could be foreseen by any interval in advance, and if the entire system went through the most rational and complete possible process of liquidation. Thus the duration of an investment is to be completely separated in thinking from the durability of any particular thing or group of things in which the investment is "embodied." In general, the duration of all investments, in a society which is at least fully maintaining its total capital, is infinite, even though the investment "in" a particular thing, or the investment "owned by" a particular individual or corporate person, is liquidated, either through sale or through consumption of the replacement fund.

It is also to be emphasised that the amount of capital which can be withdrawn from any investment by under-maintenance has no definite relation to its cost of production. It is largely relative to the speed of withdrawal; but neither the amount "disinvestable" nor the possible speed of disinvestment has any

[1] The notion of maintaining any capital quantitatively intact cannot be given exact definition; but this limitation applies to all quantitative analysis in economics, and the notion itself is clear and indispensable, and measurement, even, is fairly accurate. For most problems, moreover, the total in an absolute sense is not important; an addition to or subtraction from one account not involving a directly offsetting subtraction from or addition to some other is all that need be identified.

definite relation, either to the construction period or to the "normal" annual maintenance charge. Amount and speed of withdrawal are both further relative to distance and accuracy of foresight, especially to plans at the time an investment is physically committed. The amount of the present wealth of any nation which could be liquidated into consumption in any interval before an announced annihilation catastrophe would be limited, however remote the date. But, as already noted, any investment item which is the subject of a capital account can be "written off" in any interval, if, and only if, it has a sufficient yield above pure interest; and no investment in things of limited productive life will ever knowingly be made unless the imputed income is adequate to write it off (with allowance for salvage value) and replace the source with one of equal yield, in that period.

8. The connection in which time is really significant is that of the *mobility* of capital, freedom to transfer it to some other use. But in this connection we must avoid a common and fatal confusion between real, technical and economic mobility, and something utterly different. What people really want to do, in the main, by way of liquidating investments, especially in connection with a depression, is to convert them into "money," not into consumable product, and this is, of course, a problem in the theory of money, and not one in the theory of capital or production.

Real movement of capital from one field to another may involve either of two processes, either the use of the same concrete things in a different connection, or their replacement by other things differently specialised. Physical transfer may, of course, in addition, be accompanied with more or less alteration or reconstruction. In the transfer of capital from one field to another, durability (*i.e.*, its opposite) is an element, but one the importance of which it is natural to exaggerate enormously. Mobility, whether through physical transfer or replacement, must be considered in connection with the structural integration of a particular item in the entire industrial system in which it is used, and this includes the "labour" of every kind and grade as well as the "property" element. Obviously, mobility has no meaning in connection, say, with a part of a machine, apart from the machine as a whole. But this is true, with a difference in degree at most, of the production unit of which the machine is an element. Even the business enterprise cannot be considered independently. (Any unit separately owned will, if mobile, be in an independent position in that it can always force the larger, relatively immobile unit of which it is a part to give it an income share on the basis of

the best opportunity which may be open to it.) In general, the mobility of any item tends to be less than that of the most immobile item with which it is complementary in use—rather that of any organisation as a whole of which it is a part, and this immobility is likely to be much greater than that of any single item in it.

The discussion of mobility is confused by the further fact that the real problem is almost entirely one of uncertainty. As already shown, there is no problem of mobility if the time and conditions of transfer are anticipated when an investment is made. When either a particular transfer, or general fluidity at a known date in the future, is planned for when the investment is made, the effect on the durability or permanence of particular concrete items will run partly in each of the two possible opposite directions; in a complex unit as a whole, some items will be built more cheaply and of shorter life, in order to minimise loss on abandonment, while others will be made more expensive and more durable, but of more standardised design, so as to have the maximum value for other uses when the given project is liquidated. The latter case is common enough in connection with buildings, for example, where extra expense in construction is often incurred to facilitate readaptation to some other use in the event of a decline in the demand for the service for which they are initially designed.

9. Particularly in connection with cycle theory, actual mobility of investment is approached in importance by the possibility of temporary, partial postponement of maintenance, without loss of use value. Here it is of some consequence that the part of maintenance which figures as replacement superficially appears to be postponable by an interval bearing some relation to the service life of the items involved. But this is the standpoint of the individual enterprise and an accident of its scope. Actual technical possibility of postponing production of replacements without interrupting operations depends on a complex of conditions.

10. Of comparable importance, again, is the freedom to leave an item out of use without deterioration or other upkeep cost. There are, of course, types of property which deteriorate as fast when kept idle as when used at normal capacity, or even faster.

Under this last item, again, the ramifying complementary technical relationships and connections of ownership must be considered in determining what is the effective investment unit for which freedom of use or non-use is in question.

So important that it must be repeated in conclusion, is the fact mentioned in connection with mobility (section above), that

the entire notion of fluidity in investment in connection with crises and depressions is largely an individualistic delusion—a "fallacy of composition." In a time of depression, when people are clamouring most madly to convert assets into money, there is little or no question of an actual physical liquidation of plant into consumption. The phenomenon is partly one of maladjustment, mainly one of money, prices, and debts. The fluidity chiefly in question is marketability for cash, and the practical difficulty and the theoretical problem lie in the field of "cash" rather than in the technical properties of investment goods.[1]

In connection with the "jam" which occurs at a time of depression, the way in which the situation would be altered if the "investment structure" in the dual sense discussed by Professor Hayek were lengthened or shortened, is a problem of almost infinite complexity. Only two or three considerations can be briefly mentioned here. First, it is undoubtedly true that the time required to carry out any industrial expansion involves a lag in yield which is an important factor affecting the amount of "over-investment," whether relative or absolute—or whatever that apparent over-development of capital goods industries which is of undoubted importance in cycle theory may finally be found to mean. And the time required to construct capital goods is a factor, but only one among other factors, in the lag of increase in output behind expansion activities. Second, immobility of the productive agencies tied up in any over-developed line is undoubtedly an important fact in the depression phenomenon. But (third) whatever rôle is assigned to technical maladjustments of any and every kind in cycle theory, it is perfectly certain that the durability of capital goods is only one factor in the economic immobility of capital itself, and also (fourth) that the immobility

[1] In this connection it is, of course, fundamental that in the modern world "cash" itself arises largely out of debts whose power to perform this function depends on their own liquidity in terms of "money" in a narrower sense. But the confusion of this liquidity of loans with the "disinvestability" of capital which is implied in the Hayek theory of crises is a fallacy even more egregious than those considered in detail above. Loan liquidity means, and can mean, nothing but marketability for money, either of the evidence of indebtedness as such or of disposable assets of the debtor. Maturity dates are largely illusory, superfluous and evil, but only their meaning is in question here. They make some or all of the assets of the borrower a guarantee of the money value of the debt at a stated date. To interpret a maturity as meaning an obligation of the debtor to "liquidate" in a real sense, *i.e.* convert his capital goods into products and turn these over to the creditor, is surely an absurdity difficult to surpass. There is small likelihood that the lender would want the products, and little more presumption that they would be more convertible into any particular amount of "money" than any other assets.

of labour (including, of course, specially trained people) is of fully comparable importance with the immobility of property; and furthermore (fifth), that economic inflexibility in the large is in large part a matter or price "stickiness," along with physical considerations.

In short: A depression, in its critical aspect of serious unemployment (of persons and of property) no doubt generally involves more or less previous mistaken commitment of resources, human and non-human, sustained by immobility. But it is *essentially* a matter of price maladjustment, sustained by price stickiness. If labour were mobile and wages flexible, no fixity in the capital structure would give rise to unemployment, of labour or capital, though efficiency might be greatly reduced. The importance of the first is in any case relative to the second. The rôle of capital durability and production period is limited to contributing toward the wrong commitment and immobility of a relatively small fraction of the productive resources of a system. It is at most a not very large fraction of another similar fraction of the cause or means of cure of the basic evils.

There is no theoretical reason why there should not be fully developed and completely typical cycles in a society in which no capital goods whatever were used. Such a situation may be visualised by considering what might happen if all economic production had the form of personal services, say, of vocal music, especially if largely organised in the form of the chorus. The phenomena of training periods and resistance to retraining, in relation to changes in demand, and to money, credit, and price changes and resistance to change, would be present and adequate to give rise to all the characteristic manifestations now met with. The example is especially in point since the "production period" would clearly be of zero length. Under these conditions no one would think of trying to compute an average period of immobility for a fraction of the productive resources of society and treat it as a "period of production." [1]

FRANK H. KNIGHT

The University of Chicago.

[1] Since the publication of the *Economic Essays in Honour of Gustav Cassel* and of Professor Hayek's article, there has appeared in *Economica* an article of my own entitled "Capital, Time, and the Interest Rate" covering some of the same ground as the foregoing. If there is for some readers some repetition, no one is under compulsion to read both articles; and I am also reminded of the apology for repetition with which Herbert Spencer concluded the Preface to his *Data of Ethics*: "Only by varied iteration can alien conceptions be forced on reluctant minds."

TWO METHODS OF STATISTICAL PRESENTATION

I. Comparatives

The way in which statistics are generally represented to-day does not make it easy for the non-technical person to comprehend them. This article will attempt to show methods of presenting statistics which will enable the full significance to be grasped with much less effort.

The first of these methods is to be employed when merely the comparative rates of change are to be represented but not the absolute values of the different items. Comparisons of price changes of various commodities is an example of this. Their absolute prices are not comparable with one another, since the prices relate to different units of weight and size and so have no common physical basis of measurement. Another example is to be found in comparisons of the rates of change of index-numbers in different countries, since the absolute value of index-numbers has no meaning at all. A new kind of representation is possible in such cases and the figures obtained may be termed "comparatives."

In Table I, 1 the price developments of four different commodities are given as decimals, in the way that is generally usual.

If one attempts to compare the rise in the price of Flax from December to February from 43·4 to 49·3 with the rise of Wool during the same period from 7·14 to 8·01, a difficulty at once presents itself. The two rises can only be compared with some difficulty, since one cannot see at once which rise is relatively the greater. A calculation must first of all be made either on paper or in one's head to the effect that they are approximately equal, *i.e.* 12 per cent. and 11 per cent. respectively. It would therefore be of great value to the average reader if these calculations were already included in the statistics.

Unfortunately, in the above example, it is not possible to make all the figures instantly comparable with one another, but there exist compromised solutions which to some extent render the tables more easy to handle. For example, it is usual to make use of the so-called "chain method," which, however, has great disadvantages.

Further, as in Table I, 2, it is usual to choose as a base some

earlier date, and to reduce to 100 the whole column for that date. Two advantages are obtained by reducing a column as a whole to 100. Firstly, it is possible to obtain changes in approximative percentages by merely subtracting two items of a row one from the other but without dividing the result of this subtraction by one of the two items. Secondly, it becomes easy to compare the rate of change between an item in any one column on the one hand and the corresponding item in the base column on the other. The fact that all the figures in the base column are 100 saves even the time required to subtract the one item from the other. For example, if an item is equal to 105 in any column, then it has simply risen 5 per cent. since the date chosen as a base, for which the figure is 100.

TABLES I

I, 1.

Prices of	Nov.	Dec.	Jan.	Feb.
Flax £/ton .	46·3	43·4	48·4	49·3
Hemp £/ton .	14·75	14·66	15·04	14·88
Wool *d.*/lb. .	7·00	7·14	8·01	8·01
Silk *Sh.*/lb. .	6·67	6·42	6·79	6·65

I, 2.

Nov. = 100.	Nov.	Dec.	Jan.	Feb.
Flax . .	100	94	105	106
Hemp . .	100	99	102	101
Wool . .	100	102	114	114
Silk . .	100	96	102	100

I, 3.

Average 1867–77 = 100.	Nov.	Dec.	Jan.	Feb.
Flax . .	98	92	103	104
Hemp . .	66	65	67	67
Wool . .	35	36	41	41
Silk . .	28	27	29	28

I, 4.

Prices		Comparatives			
Feb.	of	Nov.	Dec.	Jan.	Feb.
49·3 £/ton	Flax	94	88	98	100
14·88 £/ton	Hemp	99	98	101	100
8·01 *d.*/lb.	Wool	87	89	100	100
6·65 *Sh.*/lb.	Silk	100	96	102	100

However, this method is insufficient in those cases where statistics are regularly published, since as time goes on the figures diverge appreciably from 100. The figures appear then no longer as in Table I, 2 but as in Table I, 3. So, the first advantage of the application of a base column is lost, because, the figures being appreciably different from 100, one can no longer avoid dividing the difference between two items, by one of them, in order to obtain the approximate percentage of the change. The second advantage of the application of the base is also lost, since as time goes on a comparison with the base column, which is growing ever more obsolete, becomes continually less important. Thus it is obvious that the idea of reducing a whole column to 100 is sound, but, in case of regular returns, the obsolescence of the base

destroys the advantage. A new method is, however, possible which, though not used hitherto, would avoid this defect.

The essence of this new method is that in every succeeding return a fresh column, that is to say the column containing the most recent statistics, is taken as the base column. Accordingly, each whole row has to be multiplied by such a factor that the figure in the most recent column becomes equal to 100. The figures obtained may be termed "comparatives." An example of these is given in Table I, 4.

Returns are published in order to show the course of events to the economically minded public, *i.e.* practical economists, government experts, bankers or merchants. In nine cases out of ten they do not seek an answer to historical questions, but simply wish to know how things are going on at the present moment. The only point of time which really interests them is the present, just because it is the present, and as such is distinguishable from the more or less remote past. Therefore it is important that in Table I, 4 the column which is chosen as a base, and for which comparisons are made especially easy, is the most recent column.

Against the advantages of this method there are certain difficulties.

The first difficulty confronts the author and the publisher but not the reader. With each new issue a new base has to be calculated; accordingly, the whole table has to be recalculated and reset. Both processes require time and money, so that the improvements in the service to the customer is purchased at the price of a certain increase in the operating costs.

The second difficulty is that through the change of base, the figures in any one return cannot be compared with the figures in any other. That is, when "comparatives" are published, it is tacitly assumed that the reader will only use the figures in that particular issue and will not consult those in previous numbers. However, it is not always possible to presuppose this.

This difficulty can be overcome if one considers that there are two (and only two) different purposes for which two different presentations, published simultaneously, are appropriate. For the first purpose, *i.e.* for a practical usage, it is essential that the course of development can be seen at a glance, and accordingly the appropriate "comparatives" ought to be published with a greater number of comparative previous columns. For the second purpose, *i.e.* for use as source material, the statistics must be so arranged that as many combinations of remote columns as desired can be used independently from the combination given in

the original publication. Thus, for the present issue of the return an extra column may be used (as in Table I, 4) which is not reduced to 100, but is printed as appears in Table I, 1. Those extra columns are naturally comparable with one another in any one issue, and thus from any back numbers which are necessary one can establish as many combinations of the figures as one wishes.

Finally, it should be noted that it is often useful to reduce the last column but one to 100, instead of the last column. This method should be used in weekly or daily publications in which speedy calculation is necessary. It is then possible to calculate the necessary figures before the actual base day arrives and to set up the table in advance, so that after the base day only one column—the last—has to be calculated and set up.

II. Index Relatives

It is only permissible to calculate an index-number from a series of price changes in the case when they exhibit a certain "convergence," but absurd to speak of a common trend when they are completely divergent. In the case of commodity prices, causes of such "convergence" are, for example, central bank policy as well as the general state of trade. These factors influence the price of all commodities in the same way. In the case of share prices, political events, the situation of the money market, price movements on overseas stock-exchanges have a common effect on the prices of all shares.

In addition to containing convergent factors, prices also contain "divergent" factors. Any assumption to the contrary would imply that all prices would alter in the same sense and to the same extent, thus rendering entirely superfluous the calculation of an average amount of change. As a matter of fact there are quite a number of influences which could effect such a "divergence." For example, in the case of commodity prices, the result of technical improvements or of alterations in the taste of consumers, will be rising prices for some commodities and falling for others. In the case of share prices, new items or rumours concerning individual companies have the effect of raising the quotations of some shares and lowering others.

Thus, changes in commodity or share prices are synthesised from "converging" and "diverging" tendencies. Of these the index-numbers represent the general tendency, *i.e.* only the "converging" part of this combination is extracted, whilst simultaneously the diverging part is eliminated.

The combined tendencies are represented by the changes in the quotations of commodity or Stock Exchange prices and it is usual for papers to publish them daily. The "convergency" extracted from these data is represented by the index-number and is usually also published regularly.

Beside actual prices, and besides their respective index numbers, it would be of equal importance to calculate and publish additional figures which may be termed "index relatives." In contradistinction, these would extract and reproduce the "divergent" parts and thus eliminate the "converging" parts.

The price of each particular commodity or share on any day will be divided by the corresponding index-number for that day. In this way, for each share or commodity a specific "index relative" value is obtained. Thus, in Table II, 1 the same commodity prices are reproduced as in Table I, 1, including in addition their index-numbers for the corresponding days. In Table II, 2 each single price has been divided by the index-number of that day (and multiplied by 100) in order to obtain the new "index relatives."

TABLES II

II, 1.

Prices	Nov.	Dec.	Jan.	Feb.
Flax £/ton .	46·3	43·4	48·4	49·3
Hemp £/ton .	14·75	14·66	15·04	14·88
Wool *d.*/lb. .	7·00	7·14	8·01	8·01
Silk *sh.*/lb. .	6·67	6·42	6·79	6·65
Index-Number	79·3	80·0	82·5	82·5

II, 2.

Index Relatives of	Nov.	Dec.	Jan.	Feb.
Flax . .	58·4	54·2	58·6	59·7
Hemp . .	18·6	18·3	18·2	18·0
Wool . .	8·9	9·0	9·7	9·7
Silk . .	8·5	8·0	8·3	8·1
Index-Number	100	100	100	100

II, 3.

Index Relatives		Comparatives of Index Relatives			
Feb.	of	Nov.	Dec.	Jan.	Feb.
59·7	Flax	98	91	98	100
18·0	Hemp	103	102	101	100
9·7	Wool	92	93	100	100
8·1	Silk	106	99	102	100
100	Index-Number	100	100	100	100

The changes over a period of time of the "index relatives" of Table II, 2 bring out clearly and immediately which commodity movements have exceeded the general trend, and which have lagged behind or even have moved in a contrary direction. As each "index relative" was obtained through dividing the price by the index-number, the general trend over a period of time has been eliminated, whilst the differences in the movements of the

various commodities have been brought out. From the "index relatives" in Table II, 2 the movements of the commodities relative to one another may be obtained.

It is clear that "index relatives" are every bit as important in their function as the index-numbers themselves. It is equally clear that the "index relatives" have the same logical and mathematical errors as the index-numbers and the prices, but contain no additional errors, because the "index relatives" and index-numbers are complementary, portraying as they do the two aspects of the same problem.

The position of the "index relatives" in the general body of statistical doctrine is similar to that occupied by figures relating to dispersion. The latter have also as their object the measurement of the average deviation from a general average (*e.g.* from an index-number), but only expressed by means of one figure for all values. On the other hand, the "index relatives" may be considered as a group of dispersion figures which are expressed for each particular quotation (commodity or share) by a specific ratio.

"Index relatives" further have much in common with certain graphical methods of representation. It is usual to represent on one graph several series of commodities or shares along with the index-number. The relative movements can then be seen to some extent as long as too many series are not represented on the graph. This graphical method is by no means identical with the "index relatives." The graphical representation of "index relatives" could be obtained if the ordinates of the individual items were expressed in units of the index-number. Such a graphical representation of the "index relatives" can be applied with profit in cases where the number of series is small.

Any single "index relative" of Table II, 2 has no meaning by itself, just in the same way as the absolute value of a single index-number has also no meaning, only its change over a period of time is significant. Thus, "index relatives" are suitable for presentation in the form of "comparatives" as in Table II, 3. The practical advantage of a combined representation of "index relatives" worked up as "comparatives" is a double one: working up the source material contained in Table II, 1 into "index relatives" in Table II, 2, it is not necessary for the reader to compare every change in a particular item with the change in the trend during the same period. Besides this, by the additional working up of the Table II, 2 into "comparatives of index relatives" in Table II, 3, he saves as well the computation into

percentages. Thus, all the work is already done by the author of the statistics.

A fuller example of " index relatives " is given in Table III, 3 with special reference to their application in the case of commodities. The figures are taken by kind permission from the *Statist*.

TABLES III

III, 1.—*Index-Numbers of Commodities.*

	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
Vegetable Food	58	58	60	60	59	58	58	60	70
Animal Food	105	108	112	111	107	108	113	110	110
Sugar, Coffee, Tea	47	47	53	53	53	53	53	51	49
Minerals	111	111	111	112	113	111	108	107	107
Textiles	67	68	73	74	74	71	71	71	71
Sundries	79	79	80	79	80	80	79	78	78
All Food	73	74	77	77	75	75	77	77	81
All Materials	84	84	86	86	87	85	85	84	84
All Commodities	79	80	83	83	82	81	81	81	82

III, 2.—*Index Relatives of the Groups.*

Index Relatives		Comparatives of Index Relatives								
July.	of	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
100·0	All Commodities	100	100	100	100	100	100	100	100	100
97·7	All Food	94	95	96	96	94	95	97	97	100
101·6	All Materials	104	104	103	103	104	104	103	102	100
85·4	Vegetable Food	86	85	85	85	84	84	84	87	100
133·3	Animal Food	99	102	102	101	98	100	105	102	100
60·0	Sugar, Coffee, Tea	98	98	106	108	108	109	108	106	100
130·3	Minerals	107	106	103	104	105	105	102	102	100
86·3	Textiles	98	98	102	104	104	101	102	101	100
94·5	Sundries	106	105	103	102	103	104	104	103	100

III, 3.—*Index Relatives of the Individual Commodities.*

Index Relatives		Comparatives of Index Relatives								
July.	of	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
	Animal Food:									
121·3	Beef, Prime	102	103	98	95	95	98	98	99	100
135·8	Beef, Middling	89	90	100	96	95	96	98	97	100
154·1	Mutton, Prime	88	90	82	85	83	95	108	105	100
172·2	Mutton, Middling	85	90	81	81	80	91	104	102	100
135·8	Pork	109	120	129	125	126	119	105	105	100
142·8	Bacon	98	97	116	116	108	101	104	104	100
70·9	Butter	155	149	123	131	113	101	102	102	100
	Textiles:									
95·3	Cotton, Mid Am.	75	78	87	91	90	86	91	99	100
92·2	Cotton, M.G. Oomra No. 1	84	86	88	92	87	84	93	100	100
162·0	Flax, Liv. Z.K.	76	71	77	78	85	88	90	101	100
80·1	Hemp, Manilla, fair	104	102	102	101	101	103	102	102	100
86·3	Jute, Lightnings	101	107	107	111	109	106	102	102	100
110·6	Wool, S. Australian	137	139	145	143	144	131	126	102	100
38·4	Wool, Lincoln H.H.	116	117	128	128	128	122	114	102	100
25·7	Silk, Common N. Style	139	132	136	133	129	122	115	112	100

Changes in commodity prices, caused by influences of monetary policy or of trade cycles, affect the prices of all commodities to an equal extent and are consequently convergent. Thus, these changes are included in the movement of the index-number, so that, on the contrary, the "index relatives" must necessarily be independent of them. Accordingly, the "index relatives" portray the changes in the value of each commodity, free from monetary or trade cycle influences.

The "index relatives" are prices, divided by the appropriate index-number, and so the prices are expressed in units of the index-number. Accordingly, the prices are measured in a supposed currency, of which the supposed unit of currency is equal to the absolute value of the index-number. Thus, one can look upon the "index relatives" of wholesale commodities as values, obtained by conversion of the original prices from terms of the legal currency into terms of a supposed "index currency."

The expression of values in a supposed "index currency," as measured by the "index relatives," does not involve the actual employment of a legal "index currency." But even this mere expression would not be valueless in the eyes of friends of the Index Currency Theory, because improvement in the measurement of commodity values is one of their main aims. Further, one may suppose that opponents of the Index Currency Theory would also consider this measurement as valuable. Their opposition is not directed to the measurement of commodity values by an index-number, but rather to a legal management of the currency, made in order to obtain a constant index-number.

The difficulties of exact measurement of individual commodity values are particularly great with price movements in countries where the gold standard is suspended. Comparisons between

TABLES IV

IV, 1.—*Index-Numbers of ordinary Shares and Stocks.*

	Nov.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
Building Materials	69	69	71	76	79	82	82	80	85
Coal	96	101	98	97	98	97	94	89	88
Cotton	56	54	55	52	50	50	48	44	47
Electric Light & Power	127	133	133	134	135	126	127	129	130
Gas	133	135	134	134	135	135	135	135	136
Iron & Steel	46	52	52	52	56	53	51	51	51
Oil	64	70	69	67	65	65	63	60	63
Electric Supplies	95	99	95	92	92	92	92	94	95
Home Rails	79	83	91	96	92	82	77	70	78
Shipping	19	20	18	18	18	17	16	15	15
Stores & Catering	75	76	76	76	80	81	79	80	81
Breweries & Distilleries	98	100	105	110	113	112	110	110	113
Miscellaneous	59	61	63	64	66	65	63	60	63
Total	69	71	72	72	73	72	71	69	71

IV, 2.—*Index Relatives of the Groups by the Total Index-Number.*

Index Relatives		Comparatives of Index Relatives								
Aug.	of	Nov.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
120	Building Materials	83	81	82	88	89	95	96	97	100
124	Coal	112	114	110	109	107	109	106	104	100
66·2	Cotton	123	115	115	109	103	105	102	96	100
183	Electric Light & Power	101	102	101	102	101	96	98	102	100
192	Gas	101	99	97	97	96	98	99	102	100
71·8	Iron & Steel	93	102	101	101	105	103	100	103	100
88·7	Oil	105	111	108	105	100	100	100	98	100
134	Electric Supplies	103	104	98	96	94	96	97	101	100
110	Home Rails	104	106	115	121	115	104	98	92	100
21·1	Shipping	131	131	117	119	117	109	105	102	100
114	Stores & Catering	96	94	93	93	95	99	97	102	100
159	Breweries & Distilleries	89	89	92	96	97	98	97	100	100
100	Total	100	100	100	100	100	100	100	100	100

IV, 3.—*Index Relatives of the Individual Values by the corresponding Group Index-Numbers.*

Index Relatives		Comparatives of Index Relatives								
Aug.	of	Nov.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
42·4	Assoc. Port. Cem.	103	100	99	103	108	101	99	99	100
102	London Brick Cy.	106	113	115	114	111	110	110	118	100
49·4	Pinchin Johnson	90	95	100	97	98	93	99	96	100
50·0	Wallpaper, Def.	145	161	150	115	111	107	107	113	100
100	of the Group	100	100	100	100	100	100	100	100	100
45·5	Amalg. Anthracite Co.	143	136	140	125	101	96	105	99	100
32·0	Bolsover Colliery	98	104	96	97	100	97	98	101	100
83·5	William Cory	96	92	99	100	99	95	99	97	100
39·8	Staveley Coal	85	87	85	84	90	86	87	92	100
100	of the Group	100	100	100	100	100	100	100	100	100
16·0	Bleachers' Assoc.	126	123	122	114	106	106	106	98	100
138	J. P. Coats	80	80	81	88	91	91	95	107	100
89·1	Engl. Sewing Cotton	85	88	89	93	102	97	99	109	100
20·0	Fine Cotton Spinners	134	128	132	120	115	106	104	107	100
100	of the Group	100	100	100	100	100	100	100	100	100
72·4	Anglo-Persian	101	101	103	102	99	104	101	104	100
130	Burmah Oil	101	99	102	106	109	125	95	102	100
18·2	Phœnix Oil (£1)	104	107	103	106	103	89	92	82	100
75·4	Shell (Bearer)	106	105	105	103	102	104	105	99	100
100	of the Group	100	100	100	100	100	100	100	100	100
64·1	Great Western	105	106	108	97	98	98	103	109	100
28·8	L.M.S.	106	111	107	100	101	98	101	99	100
10·6	L.N.E.	116	113	108	103	103	93	101	98	100
30·1	Southern, Def.	76	80	95	102	100	97	104	95	100
100	of the Group	100	100	100	100	100	100	100	100	100

old and new prices are untrue, or at least uncertain, if they are made either by converting new paper prices into terms of the old gold standard, or by comparing both prices in paper standard at par. On the other hand, the measurement by "index relatives," in eliminating the whole of the convergent influences, including those arising from the suspension of the gold standard, remains valid.

Another more detailed example of " index relatives " is reproduced in Table IV, 3 with special reference to its application in the case of shares. The " Actuary's " index numbers are used by kind permission of the *Economist*.

Table IV, 3 shows the development of different shares on the London Stock Exchange measured by the index-numbers for their corresponding groups.

From this table everyone who is interested in shares can see the position of those shares which are of particular interest to himself. If a person has been a holder of a particular share, whether for a year or only for two months, a glance at the table suffices to tell him whether he has done well or not in holding that share in preference to any other. Those who are in the act of deciding which share to buy will obtain equally useful hints from the table, since on examination it at once becomes clear which shares are behaving abnormally. Thus, a particularly interesting case is afforded by the fluctuations of the shares of Wallpaper Manuf. or of Amalgamated Anthracite Co.

The table will at once focus upon both the attention of the readers, some of whom will be of the opinion that the fall in the shares is justified and will continue, whilst others, on the contrary, will judge the fall to have been excessive and will come to the conclusion that the shares will rise.

It is just as impossible for the " index relatives " themselves to show whether the future will see a fall or rise of a given share as it is for the changes of index-numbers to show what will be the future course of the general trend. The " index relatives " are not meant to play the part of the prophet, but rather to reveal actual facts in a clearer fashion, and to draw attention to the position of particular shares, in the same way as index-numbers show the actual direction of the general trend.

The index-numbers in Tables III, 1 and IV, 1 of the groups, are represented in Tables III, 2 and IV, 2 as " index relatives " of the Total Index-Number. The conceptional difference between the index-numbers of groups and the " index relatives " of groups is obvious. The index-numbers of groups express the group-averages in units of the legal currency, thus representing the trend of a group in relation to the legal currency. The " index relatives " of groups express group-averages in units of the total index-number, thus representing the special trend of a group in relation to the general trend, either of all the commodities or of all the shares.

The two different expressions of the individual " index

relatives," obtained from division by the total index number in Table III, 3, and from division by the corresponding group index numbers in Tables IV, 3, show that it is possible to arrange the whole of the commodities or shares either in a small number of large groups or in a greater number of smaller groups. The smaller the single groups are chosen the more similar will be the individual items to one another within the group. Consequently, the deviations of the rate of change of the individual "index relatives" will be less the smaller the group becomes.

JOSEPH N. KOEHEGYI

RECENT CHANGES IN THE PHYSICAL OUTPUT OF ARABLE FARMS

It appears to be a generally accepted axiom that farmers as a class are slow to react to changes in price levels. Within certain limits, and particularly when farming is partly on a subsistence basis, this is undoubtedly true, and the characteristic has been studied and the causes explained by numbers of writers. It is unusual, however, to find price levels fluctuating so rapidly as has been the case during the last twenty years, and the period is, therefore, one of special significance when investigating the degree of elasticity of agricultural production. Another interesting characteristic of agriculture is the fact that a decline in prices is generally met, in the first instance at least, by an increase in the volume of production. The period since 1920 has been one of almost continually falling prices, and for this reason physical output data for these years appear to be of special interest.

In the *Agricultural Output for England and Wales*, 1930–31 (Cmd. 4605), some estimates are made of the physical output of farms since the previous Census in 1924–25. These estimates refer to the country as a whole, but do not differentiate between different sizes and types of farms, while, owing to the absence of the necessary data, it was not found possible to adjust the calculation for changes in inputs under the heading of purchased feeding stuffs, fertilisers, etc. To get a single index for all commodities for the purpose of comparing the two Census years the physical output is valued at a constant price, and the resulting figure suggests a general increase of 3·9 per cent. in 1930–31 as compared with 1925. It happens that 1930–31 coincided with a cyclical minimum in the pig cycle, while the earlier year coincided with a cyclical maximum. If pig meat is omitted from the calculation the general increase in the agricultural output is raised from 3·9 per cent. to about 9 per cent. The increases recorded are not, of course, distributed equally over the many types of commodity which are produced on farms throughout England and Wales. Notable amongst the increases were the items dairy produce, poultry, eggs and sugar beet, whilst among the decreases corn crops were outstanding.

The period immediately following the most recent Census has

been characterised by even more rapid alterations in organisation than were evidenced during the preceding six years, and the purpose of this article is to examine some of the changes which have occurred in the most important arable district of England, and to trace, where possible, related alterations in the purchase of raw material. In scope it is limited to the six counties of Norfolk, Suffolk, Essex, Hertfordshire, Cambridgeshire (excluding the Isle of Ely) and Huntingdonshire, the time period is the two years 1931–33 which immediately follow the latest Census, and the data on which it is based are drawn partly from the Annual Statistics of the Ministry of Agriculture and partly from *Reports* 19, 21 and 22 of the Farm Economics Branch of the Cambridge University Department of Agriculture.

Financial records relating to 500 farms distributed throughout the six counties, and based on an identical sample for each of the three years, show that net farm incomes (including wheat deficiency payments) have evinced a decided tendency to rise during the period in spite of a continual fall in the price index of commodities. The relative figures (1931 = 100) are shown below :

TABLE I

Changes in Index of Prices, Gross Income and Charges.

	Official Price Index of all Agricultural Commodities (England and Wales).	500 Farms in six Eastern Counties.		
		Gross Income.[1]	Gross Charges.	Net Income per Farm.
	Index.	Index.	Index.	£
1931 .	100	100	100	− 7
1932 .	94	102	98	+ 43
1933 .	88	115	101	+ 134

[1] Adjusted for changes in valuations.

The official price index is weighted for the country as a whole, and therefore does not reflect accurately the price position in these arable counties. But even allowing for some distortion here, it is clear that the betterment in net incomes is due to an increase in gross incomes rather than to a reduction in gross charges. That gross incomes should have been so increased in spite of a falling price level indicates a substantial rise in physical sales off farms which, compared with 1931, and roughly calculated from the figures given above, must amount to about 10 per cent. in 1932 and as much as 30 per cent. in 1933. Actually, of course, these increases have not been equally distributed over the various

commodities produced, and have involved a considerable quantitative addition to the raw materials purchased. While these changes are largely due to alterations in organisation deliberately undertaken by the farming community, they are at least partly caused by the favourable climatic conditions associated with the two years under review.

The following figures compiled from the official annual statistics of the Ministry of Agriculture, and referring to the six counties, substantiate the suggestion made in the previous paragraph. It may be advisable to explain that these figures are collected on the 4th June each year, and refer to the crop acreages and numbers of live-stock on farms at that particular date. To facilitate comparison the changes in numbers and acreages in 1932 and 1933 are here expressed as index numbers based on 1931 = 100.

The two years 1932 and 1933 coincide with the inauguration of the Government's Marketing Policy and the Wheat Act, and it is clear that the period has been one of very rapid readjustment on the part of the farming community in this arable district. With the exception of "horses for agricultural purposes" and "other sheep over one year old," all types of live-stock show substantial increases in numbers over the 1931 base, which (referring for the moment only to breeding stock) amount to 11 per cent. for cows in milk, 15 per cent. for ewes, 15 per cent. for sows, and 21 per cent. for fowls. Other categories of live-stock, with the two exceptions already mentioned, show increases which vary in magnitude from 6 to 31 per cent.

In tabulating changes in crop acreages differentiation has been made between those crops which are grown mainly for direct cash sale and those which are grown mainly for feeding to live-stock. Such a classification has here been used to emphasise an important feature of recent changes, and demonstrates that while the total area under crops and grass has decreased by 1 per cent., the area under those crops which are grown mainly for direct cash sale has increased by no less than 13 per cent. In this category sugar beet, wheat, and potatoes are outstanding with increases of 91, 44 and 30 per cent. respectively. Small fruit and orchards show only a small increase of 4 per cent., while there has been a decrease of 3 per cent. in peas and 30 per cent. in barley. The area under crops grown mainly for fodder has declined by 18 per cent. Here clovers and rotational grasses are outstanding with a decrease of as much as 41 per cent., while root crops (mangolds, swedes, turnips, kohl rabi, cabbage and rape) have declined by 21 per cent.

TABLE II

Official Statistics for the Six Counties.

	1931. Numbers of Live-stock and Crop Acres.	1932. Index based on 1931 = 100.	1933. Index based on 1931 = 100.
Cows in milk	128,188	105	111
Cows and heifers in calf	54,820	101	106
Bulls	6,914	102	107
Other cattle, 2 years and over	58,768	93	106
1 year and under 2	87,539	111	130
Under 1 year	82,937	115	120
Total Cattle	419,166	106	115
Ewes	336,658	115	115
Rams and ram lambs	8,414	122	125
Other sheep 1 year and over	135,152	99	72
Under 1 year	383,521	113	115
Total Sheep	863,745	111	108
Sows	69,114	113	115
Boars	5,308	117	119
Other pigs	408,816	123	131
Total Pigs	483,238	122	129
Fowls	6,602,399	114	121
Other poultry	646,958	99	111
Total Poultry	7,249,357	113	120
Horses for agricultural purposes	97,503	97	94
All horses	117,615	107	104
Mainly cash crops :			
Wheat	337,702	111	144
Barley	441,900	91	70
Sugar beet	105,413	131	191
Peas	39,116	97	97
Small fruits and orchards	43,959	102	104
Potatoes	50,726	120	130
Total " Mainly Cash " crops	1,018,816	104	113
Other crops :			
Clover and rotational grasses	408,587	88	59
Oats	217,442	95	92
Mixed corn	7,180	78	61
Rye	9,326	82	66
Beans	62,465	95	104
Turnips and swedes	87,374	84	73
Mangolds	82,244	84	82
Kohl rabi, cabbage and rape	22,101	85	87
Vetches and tares	19,697	79	104
Lucerne	25,118	88	80
Other crops	54,379	100	101
Bare fallow	107,408	124	133
Total " Other crops "	1,103,321	93	82
Permanent grass	1,093,415	102	103
Total Crops and Grass	3,215,552	99½	99

The area under permanent grass has increased 3 per cent. Thus, whereas in 1931 " cash " crops represented less than 32 per cent. of the total area under crops and grass, in 1933 this proportion had risen to over 36 per cent. It seems probable that these figures under-estimate the extent of the change, for in the former year the proportion of the total wheat and barley area which was cashed was very much less than in the latter year. In the case of wheat, for example, only about two-thirds of the total crop was cashed in 1931 compared with over nine-tenths in 1933.

TABLE III

Crop Production in the Six Counties.

	1931. Thousand Tons.	1932. Index based on 1931 = 100.	1933. Index based on 1931 = 100.
Wheat	284	115	169
Barley	337	97	81
Oats	178	99	104
Mixed corn	5	82	63
Rye	4	83	64
Beans	52	99	107
Peas	28	96	91
Total Cereals and Pulse	888	104	116
Sugar beet	790	150	193
Potatoes	317	122	148
Total " Cash " roots	1,107	141	181
Mangolds	1,340	94	80
Turnips and swedes	1,010	88	62
Total " Fodder " roots	2,350	91	73
Seeds hay	523	84	36
Meadow hay	341	85	63
Total Hay	864	84	47
	Thousand Acres.	Index.	Index.
Crops for which acreage yields are not available :			
Grass not for hay	844	106	108
Kohl rabi, cabbage, etc.	22	85	87
Vetches and tares	20	79	104
Lucerne	25	88	80
Total other " Fodder " Crops	67	85	90
Small fruit and orchards	44	102	104
Other crops	54	100	101
Total fruit and other crops	98	101	103

It would appear, therefore, that cash crops are occupying an increasing proportion of the farmed area, and that in spite of a reduction in the fodder crop area the numbers of live-stock have been rising rapidly. Has this been achieved by greater productivity of the land and the withholding for feed of a larger proportion of cash crops, by increased purchases of foreign fodder, or by a combination of both? To answer this question it is first necessary to ascertain the total production of crops, and the proportion of the total production which has been cashed.

Changes in total crop production during the three years are shown in the following table, from which it will be seen that production does not vary exactly with acreage, owing to variations in yield per acre between one year and another. For example, in 1933 the total production of wheat was 69 per cent. above that of 1931, although the acreage was up by only 44 per cent. The comparable figures for the four groups of crops for which yields are available are as follows :

TABLE IV

Changes in Acreage and Total Production of Crops.

	1931.		1932.		1933.	
	Acreage. (Index)	Production. (Index)	Acreage. (Index)	Production. (Index)	Acreage. (Index)	Production. (Index)
Cereals and pulse	100	100	98	104	99	116
" Cash " roots .	100	100	127	141	171	181
Fodder roots .	100	100	88	91	81	73
Hay . .	100	100	88	84	70	47

It is clear that cereals, pulse and " cash " roots have all yielded exceptionally well in 1932 and 1933. With cereals and pulse, for example, total production in 1933 is 16 per cent. above that of 1931 in spite of a reduction of 1 per cent. in acreage. The 1933 acreage of " cash " roots is 71 per cent. above that of 1931, but production is 81 per cent. higher. With " fodder " roots and hay, however, this position is reversed, and the effect on production of a declining acreage has been accentuated by a drop in yield, which has been particularly severe in the case of hay. It is true that the pasture acreage has increased 8 per cent. (the proportion of permanent grass cut for hay has declined), but the area under other possible fodder crops (see Table III) has decreased somewhat.

It is difficult to calculate a combined index of the productivity

of all crops, because no single common denominator is entirely satisfactory. In terms of starch equivalent the production of those crops in 1932 and 1933 for which yields are available was 104 and 106 respectively, compared with 100 in 1931. If the combination is weighted by money value instead of starch equivalent the indices for 1932 and 1933 are 107 and 113 respectively. It is possible approximately to assess the effect of climatic conditions on these indices by applying the 1931 acreage yields to the crop distribution of the two ensuing years. When this is done, production in 1932 and 1933, on the basis of 1931 acreage yields, would have been 99 and 101 respectively taking starch equivalent as the common denominator, or 101 and 107 if weighted by money values. Approximate as this calculation is, it nevertheless suggests strongly that climatic conditions have had more influence on total crop production than the readjustment of cropping and changes in practice carried out by the farming community. This deduction must not, however, be accepted too literally or too readily. There has been an appreciable increase in the purchase of artificial fertilisers during the three years. In 1931, for example, the purchase of fertilisers amounted to approximately 102,000 tons, while the corresponding figures for 1932 and 1933 were 104,000 tons and 123,000 tons respectively. An increase of 20 per cent. in the amount of fertilisers used (this increase appears to have been applied mainly to the " cash " roots) must have exerted considerable effect on crop yields, but it is, of course, impossible to measure this factor as distinct from the climatic factor.

Estimates of the volume of crops sold are given in Table V. These figures refer to the *gross* sales off farms, and it must be understood that in some cases the sales from one farm are purchases to another, while, particularly in the case of wheat in 1932 and 1933, a considerable proportion of the sales to *bona fide* merchants is drawn back in the form of purchases of the same material for live-stock fodder or for seed. But even bearing this qualification in mind, the magnitude of the increase shown, particularly for cereals and cash roots, is rather astonishing, for the total quantitative crop sales (weighted by their relative money values per ton) have risen approximately 30 per cent. in 1932 and nearly 60 per cent. in 1933 compared with those of 1931. One interesting feature of this table is that it shows that sales of cereals have increased at a more rapid rate than total production—the index for the former in 1933 being 158 compared with a production index of 116. In absolute terms this means that whereas in 1931

TABLE V

Crops sold in the Six Counties.

	1931. Thousand tons.	1932. Index based on 1931 = 100.	1933. Index based on 1931 = 100.
Wheat	185	169	247
Barley	228	95	98
Oats	27	122	111
Mixed corn	—	—	—
Rye	1	100	100
Beans	11	73	99
Peas	13	108	115
Total Cereals and Pulse	465	126	158
Sugar beet	790	150	193
Potatoes	286	121	127
Total " Cash " roots	1,076	142	176
Mangolds	7	170	57
Turnips and swedes	9	100	200
Total " Fodder " roots	16	130	140
Seeds hay	157	94	31
Meadow hay	49	47	43
Total Hay	206	83	34
	Thousand acres.	Index.	Index.
In addition :			
Cabbage, etc.	2	250	50
Vetches and tares	4	75	100
Lucerne	4	100	150
Other crops	45	107	90
	55	109	100

423,000 tons of cereals and pulse were kept for feeding to live-stock and for seed in these six counties, in 1933 only 294,000 tons were thus withheld. The comparative figures for the other groups of crops are given below :

TABLE VI

Quantities of Crops consumed on Farm of Origin.

	1931. Thousand Tons.	1932. Thousand Tons.	1933. Thousand Tons.
Cereals and pulse	423	343	294
" Cash " roots	31	39	108
Fodder roots	2,334	2,119	1,688
Hay [1]	589	539	474

[1] Adjusted for surplus carry forward.

From these figures it is clear that the live-stock fodder supply has not been augmented by withholding cash crops (except to a small extent in the case of potatoes), and that in actual fact in the two years following 1931 the supply of home-grown cereals and pulse for feeding and seed has declined by one-third (130,000 tons), of fodder roots by one-quarter (570,000 tons), and of hay by one-fifth (115,000 tons). The combined index, based on the common denominator of starch equivalent, is 87 and 74 in 1932 and 1933 compared with 100 in 1931.

This decrease in the available supply of fodder crops has undoubtedly been made up partly by an increased use of the by-products from cash crops. For example, an acre of sugar beet tops fed to live-stock can be reckoned to supply the feeding equivalent of about half an acre (say, 5 tons) of turnips and swedes, and in 1933 there were 95,000 more acres of sugar beet grown than in 1931. It is true that a large area of beet tops is not fed to live-stock and is ploughed into the soil as a manure, but here is a reservoir of fodder which can be, and is, drawn on as required. In the same way straw, the by-product of cereal production, provides a reservoir which can be tapped to meet a shortage of hay, and which, for store cattle at least, is frequently used wholly as a substitute for hay. Observation suggests that very much more straw was used in this way in 1933 than in 1931. Further, the increased production of cereals probably resulted in an increase in the amount of tail corn available for live-stock feeding, while stubble pickings for poultry, skim and surplus milk for veal and young stock, chat potatoes, seeds aftermaths, and so on, must all provide many opportunities for supplementing the live-stock fodder supply. But although these various by-products have without doubt played an important part in eking out the reduced supplies of fodder crops proper, the deficiency must have been made up largely by increased purchases of feeding stuffs.

It has already been emphasised that sales of crops on one farm may represent purchases of feeding stuffs or seed on another. The crop sales calculated above represent gross sales, and the following figures, referring to purchases of feeding stuffs, represent, in the same way, gross purchases. Unfortunately it appears impossible to distinguish clearly between material imported into the district (either from foreign sources or from other parts of Great Britain) and food-stuffs originating on the farms of the district itself. But as we are here dealing primarily with annual variations, and not with absolute quantities, this gap is not of great importance. Table VII, in which a wide variety of different types of

feeding stuffs are for convenience grouped in five broad categories, shows approximately the movements which have taken place :

TABLE VII

Purchases of Feeding Stuffs in the Six Counties.

	1931. Thousand Tons.	1932. Thousand Tons.	1933. Thousand Tons.
Grain offals and beet pulp .	315	309	353
Cereals and pulse . .	251	284	371
Proprietary mixtures . .	71	104	147
Foreign cakes . . .	70	57	51
Other feeding stuffs . .	85	80	106
Total . . .	792	834	1,028

These figures indicate that in 1932 and 1933 the quantities of feeding stuffs purchased were increased above the 1931 level by 42,000 tons and 236,000 tons respectively. And when to these totals purchases of seed for cereals and pulse are added, the inputs in 1933 are raised to 262,000 tons above those of 1931, a matter of 33 per cent.

Using the figures given in Table VI and VII (and which, it is important to remember, exclude crop by-products and pasture) a very approximate estimate may be made of the total feeding value available for live-stock in each of the three years. Thus, expressed on the common denominator of starch equivalent, the items listed in these two tables, plus purchases of seed for pulse and cereal crops, can be amalgamated as follows :

TABLE VIII

Total Feeding Value of Items listed in Tables VI and VII.

	1931. '000 tons Starch Equivalent.	1932. '000 tons Starch Equivalent.	1933. '000 tons Starch Equivalent.
Crops consumed on farm of origin	618	535	456
Purchased foods . . .	482	513	631
Purchased cereal and pulse seed.	21	20	38
Total . . .	1,121	1,068	1,125

The total figure is seen to be fairly constant in each of the three years, so that, assuming the live-stock output had remained stable throughout the period, adequate fodder supplies should have been available. But in point of fact the live-stock output appears to

have been increasing throughout 1932 and 1933 at the rate of about 7 per cent. per annum, and the totals shown in Table VIII might, therefore, have been expected to increase at the rate of about 70,000 tons a year. That they have not done so must be due to one or other of the following four causes: (1) increased attention to rationing on the part of the farmers, a factor which has undoubtedly played an important part in husbanding the short hay crops of 1932 and 1933; (2) an alteration in the age and type distribution of the live-stock kept and produced (see Table II), *e.g.* it requires less food to produce a ton of live-weight in young animals than in older stock; (3) better management and more efficient utilisation of pastures (of which the area has increased), or (4) increased use of by-products. The last of these four possible explanations seems likely to be the most important, although no doubt the other three are each partly responsible.

It is thus clear that the increased sales of crops shown in Table V do not measure a real increase in the total net physical output. Price differentials have merely favoured a movement towards the replacement of home-grown crops by purchased feeding stuffs, and have thus released a crop surplus for cash sale. The maintenance of such a position depends largely on the future relative prices of purchased feeding stuffs. It is true that, weighted either by starch equivalent or money value, there has been some increase (between 6 per cent. and 13 per cent.) in the total physical output of crops, and this appears to be due to a combination of favourable climatic conditions and increased applications of fertilisers. It also appears that an increased economic importance has been given to by-products. The principal alteration which has occurred, however, is a considerable redistribution of the various crops grown, and it is with this aspect that this article has been mainly concerned.

R. McG. Carslaw
P. E. Graves

School of Agriculture,
Cambridge.

REVIEWS

The Great Depression. By LIONEL ROBBINS. (London: Macmillan, 1934. Pp. viii + 238. 8*s.* 6*d.*)

THIS is a study of the Great Depression from the standpoint of the analytical neo-individualism which has been developing in recent years at the London School of Economics. Professor Robbins assails tendencies which are uppermost in the modern world in economic policy and economic thought, and pleads for a return to old-fashioned principles and traditional policies—for a return to the gold standard on strict pre-war lines and "not on the inflationist lines which caused its breakdown in the years after the war," for a "radical limitation of State activity," for leaving to the business-man "the assumption of risk and the planning of initiative," for capitalism, for Free Trade. But (the question of Free Trade apart) he pleads for these things in an entirely new-fashioned manner. He does not argue that a sound currency must be based on a metal possessing an intrinsic value. He says nothing about the inefficiency of bureaucrats or the damaging effects of high taxation. He makes no point of the stimulus to efficiency supplied by competition, or of the stimulus to exertion and enterprise supplied by the motive of profit. With some of these time-honoured arguments he would doubtless feel considerable sympathy; with others, probably, little or none at all. But in any case these are not the considerations which interest or move him. His attitude is governed by an elaborate and essentially abstract theory of the conditions of economic equilibrium. His quarrel with the experiments in State "interventionism" which he assails is that they do violence to the conditions which this theory suggests as essential for the maintenance of equilibrium. The object of his book is to vindicate this theory by an appeal to the broad facts of the depression, rather than to expound it systematically. In Professor Robbins' words, "the various analytical theorems" which underlie his arguments are not "set out in full rigour." I shall not, therefore, concern myself here with his theoretical analysis, but shall confine myself to his interpretation of the facts, and to the conclusions which he draws from them.

Why, first, did the depression occur? Mainly, Professor Robbins answers, as an inevitable reaction from an inflationary

boom in the preceding years. The Central Banks, at any rate in Great Britain and the United States, were, he contends, too much under the influence of monetary reformers who wished to "manage" currency in the interests of stability and who fastened on a steady commodity price-level as the criterion of stability. The gold which flowed to the United States was not, as is sometimes alleged, "sterilised," but was allowed to form the basis of a large expansion of credit. In Great Britain, on the other hand, there was no contraction of credit, such as there ought to have been, in Professor Robbins' view, according to the true rules of the gold standard game, since the pound was over-valued, and the exchanges were constantly tending towards gold-export point. The decisive phase was reached in 1927, when the authorities of the Federal Reserve system, largely with the object of relieving the pressure on Great Britain, embarked on a vigorous policy of open-market purchases, in order to force down money-rates and thus promote an outflow of gold. This gave a renewed impetus to the inflationary tendencies which were at work, and rendered them uncontrollable until they encountered "the inevitable smash."

Why, next, has the depression proved so unprecedentedly severe? Partly, Professor Robbins answers, because of certain weaknesses "in the political and economic structure" of the post-war period, and partly because of the mistaken policies which have been pursued since the slump began. Under the former head, he mentions political unrest (particularly in Germany), the capital shortage in Central Europe, the large technical improvements in agriculture, the exceptional gullibility of the post-war investing public, and, above all, the diminished flexibility of the economic system as the result of "the cartellisation of industry, the growth of the strength of trade unionism and the multiplication of State controls." Under the latter head he mentions the growth of obstacles to international trade, the attempt in the United States to maintain consumers' purchasing-power by discouraging wage reductions, and the more general attempts to avert liquidation by propping up unsound business positions. Since 1931 the depression has been further intensified by the breakdown of the international gold-standard system. The fall of the pound gave a needed relief to Great Britain from the difficulties of over-valuation (though it would probably have been better for us, in Professor Robbins' judgment, if we had obtained that relief by the alternative route of wage reductions); but it seriously aggravated the difficulties of other countries and

accentuated the fall of world prices. Finally, there came the experimental policies of President Roosevelt. Whether these will suffice to "prevent some degree of recovery," Professor Robbins is unable to say, since the various measures "work in such different directions." But, though some of them, notably the policy of lavish public expenditure, may be helpful to recovery in the immediate future at the expense of causing "subsequent deflationary collapse," Professor Robbins regards all of them as misguided, and he proceeds to deliver an onslaught on the policy of "restrictionism" with particular reference to the limitation of agricultural output, and on the idea of "planning" which amounts in practice in his view to much the same thing.

Professor Robbins then turns to consider the conditions requisite for recovery. He places first "a return to business confidence," and holding that it is "quite clear . . . that, political complications apart, the main danger to confidence at the present time is the fear of monetary disturbance," he demands immediate stabilisation of the exchanges, to be followed later by a restoration of the gold standard on pre-war lines. Next he urges a removal of "the grosser obstacles" to international trade and a lowering of tariff barriers. Finally, he insists that the adaptability of the economic system must be restored by "the elimination of all kinds of inflexibility." By this he means that wage-rates and the selling-prices of commodities must both be allowed to fall when supply exceeds demand, as they would under old-fashioned competitive conditions, and must not be maintained by the power of trade unions in the one case or of cartels or monopolies in the other. To secure the desired flexibility in the latter case, all that is necessary is to withdraw from monopolies the support of Government policy; for "cartel prices have never shown themselves unduly inflexible when the cartels could not depend upon a tariff or other forms of State support." The same principle, he seems to suggest, is applicable to the problem of trade unionism and wages.

> "In order that the market should be reasonably free it is not at all necessary that trade unions should be prohibited. It is necessary only that they, equally with other would-be monopolists, should receive no support from the Government, either direct or indirect."

Elsewhere Professor Robbins argues that the obstinate persistence of heavy unemployment in Great Britain in the years preceding the depression was due to the fact that the trade unions had been relieved by the system of unemployment insurance of their previous responsibility for maintaining the unemployed. "It is one of the consequences of unemployment insurance in

the form in which it existed during that period that it increased the rigidity of wages." Whether he would seek to give effect to the principle of withdrawing Government support from trade unions by abolishing or altering drastically the system of unemployment benefit, or whether he is content with the changes that have been made in it since 1931, he does not say.

The above is necessarily only a bald summary of Professor Robbins' main contentions. He argues his case with great lucidity and argumentative power, with intellectual courage, and, so far as an undeviating adherence to an essentially *doctrinaire* thesis will allow, with considerable open-mindedness and candour. But how far do the facts really justify the inferences which he draws from them? I must confine my critical comments to a few major issues.

Up to a certain point, Professor Robbins' diagnosis will be generally accepted. It is common ground to most economists to-day that, taking the world as a whole, the monetary conditions of the years preceding 1929 were prevailingly inflationary, that the industrial conditions were prevailingly those of boom, and that these conditions contributed largely to cause the ensuing slump. American experience, indeed, during this period has demonstrated fairly conclusively that a steady price-level, when productivity per head is increasing rapidly, is consistent with the development of a dangerously inflationary situation. This was not sufficiently appreciated in the years before the slump by monetary reformers and perhaps not by Central Bankers. It is important that the lessons of this experience should be learnt; and it is reasonable to conclude that a steady commodity price-level is certainly an inadequate, and possibly a false, criterion for avoiding trade fluctuations.

But Professor Robbins' contention that we must restore the international gold standard on pre-war lines, eschewing for the future all attempts at "management," is quite another matter. In urging this, he has two objectives in view: (1) to preserve what he calls "interlocal equilibrium," (2) to avoid inflationary conditions. If, he argues, a country which is "out of equilibrium," and is tending to lose gold, declines to curtail credit and "offsets" its loss of gold by open-market operations, the interlocal disequilibrium will persist. In so far as this is corrected by an expansion of credit in the countries receiving gold, a net world inflation will ensue. Therefore, Professor Robbins insists, a country tending to lose gold must on no account indulge in "offsetting" operations; it must take its medicine of credit

contraction with a view to regaining health on the basis of a lower level of money costs. On this side there is no doubt at all as to Professor Robbins' meaning. He is not only clear, but emphatic. But what of the countries which are receiving gold, possibly in large quantities? Are they equally to refrain from offsetting operations, and to allow a local inflation to develop? On this side, Professor Robbins is neither so emphatic nor so clear. In his general account of what ought to happen under a proper international system he speaks of the Central Banks regulating "the volume of credit in their respective areas by reference to the fluctuations in their holdings of these metals, expanding as they increase, contracting as they contract, and rigorously avoiding 'offsetting' credit creation. . . ." A slight note of hesitation is apparent. "Expanding as they increase, contracting as they contract"; symmetry of treatment is maintained so far, but the obligation to avoid offsetting operations is limited to credit *creation*.

Upon this point Professor Robbins, with his strong anti-inflationary bias, is in a dilemma. He seeks to escape from it by indicating that he has no objection to prudent management of the gold standard on international lines, and that it would be proper and desirable for the Central Banks to concert means of checking an inflationary tendency by varying their reserve requirements. But it is far from clear that he would think it is the least improper for a single Central Bank to check an inflationary movement in its own country by curtailing credit, even though its gold reserves were increasing.

> "If," he tells us, "as soon as there appeared signs of a general boom on security markets, the Central Banks were to take action to bring it to an end, it seems probable that extremes of business fluctuations might be avoided."

I hardly think he would maintain that such action must never be taken by a Central Bank except in concert with others. But does it not then come down to this, that Professor Robbins is in favour of "management" and "offsetting operations," provided they are directed to checking an undue credit expansion, and are never used in the opposite direction? If, however, we were to have management in the one direction only, would we not be likely to get a net deflationary trend whenever serious "interlocal disequilibrium" exists?

Surely the sensible conclusion is that an acute condition of "interlocal disequilibrium" is bound to give rise to formidable monetary difficulties. This brings me to a serious lack of perspective in Professor Robbins' diagnosis. In the post-war

period the interlocal disequilibrium was very acute indeed, and it comprised many more factors than Professor Robbins is willing to admit. It is curious to observe that he refuses so much as to mention the words Reparations and War Debts; and it is evident that he is convinced that these factors are of almost negligible importance in the post-war story. It is one of his dogmas that "given time, prices and costs in the different countries concerned can be adapted to carry through almost any degree of transfer over almost any degree of tariff obstacle." Accordingly, while he is prepared to concede importance to any element of maladjustment that can be expressed in terms of a price or a cost, such as the relatively high interest rates in Central Europe and the over-valuation of the pound, he declines to take account of a gross quantitative disturbance, such as the radical change which has occurred in the balance of international indebtedness. Yet, in the opinion of all those who have been most closely in touch with international economic affairs, this change has proved to be of governing importance. Incidentally, the experiments in monetary management arose directly out of it; for large-scale open-market operations were first adopted by the Federal Reserve authorities in the early 'twenties to prevent an undue credit expansion resulting from the enormous inflow of gold that was then taking place, before the idea had occurred to the villain of Professor Robbins' story, the monetary reformer.

I pass to what is perhaps a more central issue, Professor Robbins' insistence on the need to restore flexibility to the economic system by ensuring that prices and wages are reduced more readily whenever supply exceeds demand. How far does this view gain confirmation from the events of the depression? There are fairly strong grounds for arguing that in the years before the slump the special difficulties of Great Britain were prolonged and aggravated by the comparative rigidity of our wage-rates, and that our enforced departure from gold was largely attributable to this cause. For correcting "interlocal disequilibria" Professor Robbins is on strong ground in demanding flexibility of wage-rates—if flexibility of exchange-rates is not to be allowed. But he is not content with this ground, and, on the general issue, all the main facts, as it seems to me, are arrayed against him. No country has suffered more intensely from the depression than the United States; and in no other country, and at no other time, have such wholesale and drastic cuts been made in wages, salaries and every element of money costs as were made in the United States between 1930 and 1933. The obvious

moral of the American experience is that a general lowering of wage-rates serves to accentuate and perpetuate the vicious circles of depression. Indeed the subsequent adoption by President Roosevelt of policies designed to increase consumers' purchasing-power is largely attributable to the widespread belief in the United States that the idea of countering a depression by lowering wages and money incomes has been shown by experience to be a fallacy.

What has Professor Robbins to set against these facts? Merely that the process of reducing money costs did not begin soon enough.

> "At the outset of the depression," he complains, "other measures were adopted. In the United States the word went forth that consumers' purchasing-power must at all costs be maintained. President Hoover pledged the leaders of big industry to make no reduction of wage-rates. Until the summer of 1930 no serious reduction of wage-rates took place. At the same time, special efforts were made to maintain rates of dividends for shareholders."

Thus, in blaming "inflexibility" for the "economic instability of the modern world," Professor Robbins is pursuing, as it seems to me, a false scent. The instability is a world-wide phenomenon. It is doubtful whether inflexibility in the post-war decade was materially greater than before in any country except Great Britain. For, against the growth in the power of trade unions and cartels, we have to set the decline in the authority of custom which served in the past as an effective restraint on flexibility. The causes of the modern instability lie, in my judgment, elsewhere:—in the disturbance of the balance of international indebtedness, already referred to, and in the disappearance of the rapid growth of population which used to ensure expanding markets for each particular commodity. If the latter point is valid, we are likely to require in future not less, but more "State interventionism."

This, however, is a matter of opinion. Professor Robbins' book is of such a calibre that it can be read both with profit and with appreciation by those who are unable to accept its main contentions. H. D. HENDERSON

Economic Reconstruction. Report of the Columbia University Commission. (Columbia University Press. Pp. xvi + 250. 15*s.*)

International Economic Relations. Report of the Commission of Inquiry appointed by the Social Science Research Council. (University of Minnesota Press: London: Humphrey Milford. Pp. x + 397. $3.)

WHEN a number of eminent persons of strong opinions sit down round a table to produce for general consumption an

agreed statement on highly complex and controversial matters, the result, whether the subject-matter be theological, political or economic, is apt to be vaguely impressive indeed, but a little lacking in punch, precision and coherence. The first of these Reports cannot be altogether exempted from this criticism : one feels, as no doubt they felt themselves, that each member of the galaxy of distinguished scholars whom Professor MacIver gathered round himself in an attempt to answer President Butler's searching questions could have shone in isolation with a steadier and more penetrating light than is achieved in their gallant attempt at composite illumination. But we must not be ungrateful; and while the serious economic student will perhaps derive more sustenance from the memoranda by individual members which are appended to the main report than from that document itself, the latter does contain a number of agreed conclusions which were well worthy of setting on record.

It is on the monetary side that the Commission, thanks, no doubt, to a series of admirably thorough and balanced memoranda presented by the secretary, Dr. Gayer, came nearest to achieving unanimity and precision. They advocate the maintenance of " equilibrium in the cost-price structure,"—interpreted by the majority to mean approximate stability in the general price-level supplemented by deliberate arrangements to secure diffusion of the fruits of technical progress in the form of rising salaries and wages, thus preventing price-stability from engendering windfall profits : an important minority, however, expresses a preference for achieving the same end by means of a gradually falling level of prices. The Commission are in favour of supplementing banking technique by using Governmental expenditure on public works as a stabilising factor, and by the piling up of " consumers' reserves " (dividend equalisation funds and unemployment insurance funds) in time of boom and their release in time of depression. The danger that this latter measure will aggravate fluctuation by enhancing the ease of the capital-market in boom and its tightness in depression is exhaustively examined in a special memorandum by Prof. Hansen ; but Prof. Angell remains of opinion that to be successful such a scheme would require a radical recasting of the banking system. The Commission favour the ultimate re-establishment of a " reformed " international gold standard, and the taking of immediate tentative steps with this end in view : it is probably to be inferred that they would regard the action taken in January 1934, soon after the presentation of their report, as substantially implementing their point of view.

Some of these recommendations, especially that for maintaining an upward pressure on wages by means of the machinery of the National Recovery Act, may be regarded as going outside the purely monetary field; but generally speaking when they leave this well-trodden pasture the Commission are less successful in creating an impression of knowing what they want and how to get it. The terms in which their examination-paper was forwarded to them by President Butler more than hinted that the pace of technical progress was to be regarded as lying at the heart of their problem; and the Commission—Prof. Schumpeter uttering a genially sceptical note—record themselves as duly impressed by the evidence offered to them by engineers of the existence, even in prosperous times, of excess capacity for production. But their condition of impressedness does not lead to any very definite conclusion; and it is left for Prof. J. M. Clark, in an original and provocative memorandum, to analyse the reasons for which "the system may fail to assimilate all its productive power," laying stress on the necessary discontinuity in the production of capital goods and on the wastage of saving in unnecessary duplication of existing types of equipment, and hinting at the disturbing possibility in the background that "the wage system in its conventional form cannot solve the dilemma between wage costs low enough to be consistent with full employment, and sufficient progress towards more equal distribution to furnish the type of market which a system of mass production requires."

The Commission "regard economic planning as a great experiment in statecraft which the times demand," and while they issue a warning of the danger of universal limitation of output involved in the administration of the N.R.A. and A.A.A., they appear to give a general blessing to those measures, and make their recommendation of tariff reductions conditional on the "maintenance of standards" thereunder established. But the principles of interference with *individual* prices and branches of production are not accorded anything like the same full treatment as those of the management of the general price-level; and in their general exposition of the meaning of a "planned economy" the Commission have little to say on such matters, and, with the aid of a somewhat doubtful analogy from the function of "scientific management" in individual enterprises, interpret it rather as "an attempt to establish an equilibrium among all the service factors which accommodate industry," such as the training of labour and the prosecution of economic research, as well as the control of monetary factors already discussed. And their

specific recommendations in the industrial field seem to boil down to one or two suggestions for the improvement of Company Law. Not thus, surely, is "economic planning" understood by our Elliots and Macmillans, let alone our Crippses!

The Commission of Inquiry into National Policy in International Economic Relations, appointed under the chairmanship of President Hutchins of Chicago University by the Social Science Research Council, shared one advantage with the Columbia Commission,—the services of Prof. Hansen, who acted for a time as its secretary and director of research, and whose instructive study of America's foreign trade position makes up a considerable part of the volume which it offers to the public. But it also enjoyed advantages which were not available to the Columbia professors,—the financial aid of the Rockefeller Foundation, the narrower limitation of its terms of reference, and the date, later by nearly a year, of the issue of its report. It has thus been assisted towards setting out, in the forefront of its report, a number of recommendations of remarkable clarity and boldness.

Its main thesis, based on a lucid exposition of the general principles of international exchange and of the peculiar position of the United States, is that that country must take steps to increase, swiftly and largely, the volume of its imports, unless it is prepared to accept a drastic reorganisation of its economic life, and in particular a drastic curtailment of its agricultural production. It is argued with overwhelming force that the existing situation of a large international surplus on current account "all dressed up with no place to go," as Mr. George Putnam picturesquely puts it,—a situation which has been aggravated by the low level at which the dollar has been stabilised, and which has resulted in the import of more than a milliard dollars of gold in 1934—cannot continue without gravely disturbing consequences. It is further argued that, whatever may have been the merits or demerits of dollar devaluation in the first instance, the *fait accompli* offers a golden opportunity to the United States of scaling down its trade barriers without submitting to the pains of actual deflation.

Hence the Commission recommends a substantial lowering of the tariff,—not by the method of a uniform percentage reduction, but by concentrating first on complete removal in those cases in which no serious addition to unemployment would result,—for instance, articles supplied almost wholly from abroad. But if this is found insufficient they recommend the lowering of duties on

other articles, provision being made that the permitted volume of imports under the new rate "should not be greater than a stated volume, say, 5, 10 or 20 per cent. *more* than the average yearly imports of the preceding ten years, or of the preceding year, or of the year of largest imports—whatever is deemed wisest. Any goods offered for import in excess of this volume would be required to pay the old duty." Further, "we recommend that the Government consider the payment, under proper safeguards, of a dismissal wage to labour thrown out of employment as a direct consequence of sudden changes in the tariff." Pending the adoption of this course, they recommend that the greatest possible use should be made of the powers at present possessed by the President to effect tariff reductions of up to 50 per cent. through the negotiation of reciprocal trade agreements; but they are fully alive to the drawbacks of bilateral agreements, and their minds turn, as have those of the advocates of freer trade in other lands, to the idea of a group of nations "pledged to lower tariffs as rapidly as possible, to abide by a set of necessary agreed-upon rules of trade, and to make available to all members of the group any concessions made by any member to any other."

The Commission make a number of other important proposals in the sphere of international dealings, including repeal of the Johnson Act forbidding loans to countries in default, and measures designed to prevent the use of sanitary embargoes, etc. for discriminatory purposes. They advocate the transfer to the Tariff Commission of the tariff-making powers of the N.R.A., and while acquiescing in a limited subsidisation of agriculture, condemn, in the interests of the export trade, the price-raising policy of the Government, especially as manifested in the system of cotton-loans. Their conclusion that "the maintenance of a large deficit, as an emergency measure, is nowise dangerous to our financial structure" is tempered by a warning against permitting a rapid increase in costs of production and by a recommendation that "the administration prepare itself for quick transition . . . to a surplus position and to a programme of debt retirement."

The report is followed by a number of selected memoranda, among which it is perhaps permissible to single out for special mention Mr. Clayton's informing study of the position of American cotton in the world market, and a gloomy and impressive paper by Prof. Angus of British Columbia University on responsibility for peace and war in the Pacific. The whole volume constitutes a most powerful and timely plea for the view that, in the words of

one of the contributors, " monetary policy will not solve a trade problem."

It would be ungracious for an English reviewer to conclude without recording that both these important Commissions declare in favour of a speedy settlement of the war-debt question by a procedure amounting to something not far removed from cancellation. D. H. ROBERTSON

The Supply and Control of Money in the United States. By LAUCHLIN CURRIE. (Harvard University Press : Humphrey Milford. Pp. xvi + 199. 10*s.* 6*d.*)

THE argument of this able and stimulating book may be summarised as follows. Whatever be the proper objective of monetary policy, control of the supply of money is an essential instrument for its attainment, and is indeed the main *raison d'être* of a Central Bank. In the United States this control is very imperfect. This is partly due to certain technical features in the structure and operation of the Federal Reserve System, the most important of which is perhaps the fact that the unwillingness of the member banks to remain in debt to the Reserve Banks—itself a factor favourable to efficient control—varies as between different times and as between different classes of banks. But it is also due to the fact that control of the supply of money has never been the avowed object of the reserve authorities. For historical reasons the supply of the most important type of money —demand deposits—has become inextricably bound up with the business of lending and investing, and the authorities have taken the character and quality of bank loans and investments to be their chief object of concern. Such control as they have achieved over the volume of money has thus been achieved largely by accident; and on many occasions, even with the imperfections of the existing machinery, they might have achieved better results if they had made this their main objective, instead of allowing themselves to be deflected by extraneous considerations.

Mr. Currie's case is developed with the aid of much ingenious argumentation and painstaking statistical research. His chapter on the fatal ambiguity of the word " credit " is especially worthy of study by all who aspire to mould opinion on monetary matters. And in the central chapter of the work, entitled " The Monetary Theory versus the Commercial Loan Theory of Banking," he effectively destroys the theoretical foundations of that doctrine of " productive credit " which finds its most coherent expression in the famous Federal Reserve Report for 1923. The question which

he poses remains, so far as I know, unanswered by those who shake their heads over the growing entanglement of the American banks with the long-term capital market in the years preceding 1929. What is to happen if, as seems to have been the case in America in those years, the desire of the public to make savings in the form of bank deposits is increasing, while for reasons connected with the structure of business the demands made by industry and commerce on the banks for working capital is suffering a secular decline? Whatever our exact formulation of the concept of "monetary equilibrium," how can we hope for it to be maintained in such circumstances unless those institutions which have the virtual monopoly of the creation of money are prepared to issue it through the route of participation, in one way or another, in the formation of fixed capital? Observing that in the depression "the English banks offset the decline in their loans to customers by increasing their investments so that deposits were actually higher in January 1933 than in 1930," Mr. Currie is inclined to conclude that this problem is nearer solution in England than in the United States; but this perhaps is to over-estimate the speed and certainty of the process by which the purchase of existing Government securities works through to an increase of industrial investment, and to under-estimate the strength of the tradition, far stronger in England than in the United States, that it is not the banker's job to tie up his depositors' funds in the construction of fixed capital. Undoubtedly the chief reason why the arguments of bankers and their critics so often fail to meet is that the former are concerned with justifying their stewardship of individual savings, while the latter are really impugning the efficiency of the whole machinery of banking as a money-factory. And undoubtedly Mr. Currie has put his finger on a long-run problem which, if it cannot be solved by light-hearted advice to Anglo-Saxon bankers to mould themselves upon the Credit Anstalt and the Danat, is none the less a real problem because the individual banker, glowing with the consciousness of individual virtue, does not feel called upon to recognise its existence.

Mr. Currie's own ideal solution, which it is fair to add that he does not in the least expect to see realised in practice, is for the Government to take over the whole business of issuing demand deposits as well as notes, controlling the volume of money thus defined by means of the current operations of public expenditure and taxation as well as the purchase and sale of securities, and leaving the banks to conduct the old fashioned loan business by

the use of their time-deposits. The presentation of the scheme is somewhat sketchy, and is coloured by the inflation-bacillus whose presence one cannot help detecting in Mr. Currie's blood, and which leads him to assume that the Government action called for will almost always be in an expansory direction. Further, it is not clear that the solution of the problem of stagnation, where that arises, is necessarily more than verbal; for since any account with the Government is to be *called* a demand deposit and therefore "money," money created by the purchase of securities "might remain unspent but it could not be extinguished" (if it were put on time deposit with a bank it would presumably become a demand deposit of that bank with the Government): yet we might be no farther on towards maintaining the flow of expenditure and income. Nevertheless, if only as an illustration of the principle that the operations of public finance may have a vital part to play in the technique of monetary control, the scheme is well worth letting the mind play upon.

In default of its realisation, Mr. Currie makes a number of suggestions for the improvement of the American banking system, which run mostly on familiar lines, and upon which I have no space here to comment.

It is in his treatment of the problem of cyclical fluctuation that Mr. Currie most leads one to fear that if he were allowed to superintend the working of his own policies the inflation-bacillus might be found in practice to assume control. It is true that in set terms he recognises the need for contractionist as well as expansionist policies and the fact that it is not only the quantity of money but the rate and character of its spending that counts; but his criticisms of the actual course of Federal Reserve policy lead one to doubt how large a part the recognition really plays in his own processes of thought. True it is that in the American experience of 1922–9—the "sloom followed by a bump"—long-term deflationary and short-term inflationary forces seem to have been interwined in a most puzzling skein which it still remains for history completely to disentangle. But I feel that it needs more than Mr. Currie's figures of money-supply, from which, it must be remembered, time deposits are excluded altogether (and even the new money which finds its way on to time deposit must have been expended at least *once*) to persuade one of the significance of his conclusion that "from the view-point of the supply of money the period from 1925 on was one of increasing monetary stringency, reaching an acute stage in 1929." And if the doctrine that "it will be at times essential that energetic action be taken

before the forces making for an up-turn or down-turn in business are in full swing " is to be interpreted to mean that the machinery of reflation should be set in motion even before the boom breaks, one is tempted to fear that the execution of his clear-cut and somewhat mechanistic programme might lead in practice to even worse results than that halting application of untenable theories which he charges against the Federal Reserve authorities. But these things are, and are likely to remain, subjects of acute controversy; and in any case for his attempt to clear our heads on a fundamental matter of great importance, as well for his statistical labours and acute suggestions on points of detail, Mr. Currie deserves our thanks.

D. H. ROBERTSON

Australia in the World Crisis, 1929–1933. The Alfred Marshall Lectures delivered in the University of Cambridge, October and November 1933. By DOUGLAS COPLAND. (Cambridge University Press, 1934. Pp. xii + 212. 9*s*.)

THIS is a good book. No economist can fail to be interested in Australia, where, for the past four years, the plans of the Economic Men have been put into practice. One of the leaders of the Economic Men, in their battle against the Sound Financiers and the Unsound Utopians, has been Professor Copland. He was chairman of the committee which evolved the famous " Premiers' Plan "—or, as he prefers to call it, the " Economists' Plan." In this book, therefore, he is telling his own story. And an interesting story it is; interesting not only to the reader who has paid little attention to the Australian economic experiment and who wants a clear, concise, readable account of what has occurred, but interesting also to the reader who has tried to keep abreast of Australian developments and who will find there both an admirable summary of the masses of information and opinion through which he has ploughed and a trenchant defence of Australian economic policy against all critics.

There is no need to recount here the story of Australian revival which this book contains. The general outline of the Economists' Plan—reduction in basic wages, reduction in internal interest charges, depreciation of exchange, and expansion of central and commercial bank credit—is generally familiar. As for the details, they may be found in the book itself.

Canadian economists, no doubt in common with those of other Dominions and young countries, have had the Australian success upon their minds, if not their consciences, for some years; and

they are by now inclined to regard Australian economists with an eye somewhat jaundiced by jealousy. It is gratifying to find, therefore, that Professor Copland takes the fourth of his eight chapters, entitled "The Flexibility of Institutions," to explain some of the circumstances, particularly favourable to success, which existed in his own country. Three pieces of machinery receive specific attention. Professor Copland does not fail to point out that in the halcyon days before 1929 the rest of the world was prone to regard the Australian Arbitration Courts as instruments whereby wages were forced up to an uneconomic level, and that the political parentage of the Commonwealth Bank was such that it was regarded with scarcely less suspicion. Nevertheless, without a well-established and well-trusted Arbitration Court, the general reduction of money wages and costs would have been politically and economically impossible. To the Commonwealth Bank Professor Copland gives the credit of providing a ready means—finance by rediscountable treasury bills—whereby the governments could secure accommodation for relief and other expenditures without tightening the money market. It is not surprising that the Bank should receive little credit for courageous leadership or for bold strokes of finance; but it is surprising that practically no mention should be made of the Bank of New South Wales, from which such leadership was actually forthcoming. Surely this bank, which broke away once to lower the exchange rate and once to reduce the deposit rate, and which thus forced a progressive policy on the rest, including the Commonwealth Bank, has every right to special mention as one of the institutions which supplied the flexibility required by the plan? The third institution to be discussed is the Loan Council. It is difficult for one who has never studied the economics of a federally constituted country, where the borrowing powers of the federated units are unhampered, to realise how indispensable to economic sanity is the centralised control of public borrowing. Among the sweetest uses of the relatively early arrival of economic adversity in Australia was the surrender to the Council by the states of their autonomy in borrowing.

Although a moderate inflationist, Professor Copland does not set much store by public works as a remedy for Australian depression. He says: "In a depression there is much to be said for relaxing financial standards to provide work for unemployed pending recovery. But Australia had a special problem in her public works expenditure. She had been spending £40 m. to

£50 m. per annum before the depression, and she could not look forward to a resumption of loan expenditure on this scale. . . . At the end of an era of great constructional expenditure, additional employment must be found in export industries or in industries competing with imports" (p. 64). The only exception which can be taken to this argument is regarding the suggestion that the Australian situation in 1929 was in any sense unique. On the contrary, it was the rule for raw material producing, capital importing countries. In such countries a boom is ordinarily based upon high money incomes of the primary producers. Not only are living standards high, but the whole capital equipment of the country is rapidly expanded, by public as well as private enterprise, in fulfilment of the chief purpose of the country's economy, which is the production, movement and marketing of the primary products. When world demand for these products fall, and their prices decline, the existing equipment appears so redundant and its value falls so rapidly that capital expansion for private profit is out of the question. At the same time, public authorities find their obligations increased and tax revenues falling off, so that the interest rates which they have to pay rise rapidly and prohibit substantial borrowing through ordinary channels for public works. Even if, in the face of these difficulties, public works are undertaken they will not "prime the pump" as they may be expected to do in countries where the primary cause of depression is a contraction in the capital goods industries themselves. In the latter case the new purchasing power is expected indirectly to stimulate the capital goods industries themselves, and by going to the root of the trouble eventually permit the withdrawal of the "artificial" stimulus. In the former case, however, nothing is done to remove the originating cause of the depression—the diminished purchasing power of the primary producers. Indeed, in so far as the expenditure of public moneys indirectly supports the prices of consumable goods, these unfortunate producers will actually be worse off than before. We may therefore conclude that, in a country such as Australia, a public works policy may be definitely harmful in that it may increase the hardships of those already suffering most. On the other hand, it may be beneficial if it is judiciously used in conjunction with other measures, such as exchange depreciation, which revive the flow of national income at its dwindling source.

A. F. W. PLUMPTRE

University of Toronto.

Theory of the Credit Standard. By HANS GLÜCKSTADT. (London: P. S. King. 1932. Pp. xv + 345. 15*s.*)

The Mechanism of the Credit Standard. By HANS GLÜCKSTADT. (London: P. S. King. 1933. Pp. xiii + 111. 7*s.* 6*d.*)

The Foundation of Industrial Stability. By E. M. DALTROFF. (London: P. S. King. 1933. Pp. vii + 138. 7*s.* 6*d.*)

The Economy of Abundance. By STUART CHASE. (New York: Macmillan. 1934. Pp. vii + 327. 8*s.* 6*d.*)

The Money Muddle. By JAMES P. WARBURG. (London: George Routledge. 1934. Pp. x + 273. 7*s.* 6*d.*)

Douglas Delusions. By F. J. DOCKER. (Sydney: Angus and Robertson. 1933. Pp. vii + 243. 4*s.* 6*d.*)

IN the first of these books Mr. Glückstadt builds up his theory of money. He is a quantity theorist of the "Cambridge" rather than the "Fisher" type; but he claims that the stabilisation of the price level as ordinarily conceived should not be the object of monetary policy. Fluctuations in this level are the result of both monetary factors and factors inherent in the nature of the supply of goods, and it is only the effects of the former that should be offset by monetary policy. In *The Mechanism of the Credit Standard* he explains that this may be effected by the deposit of all the world's gold reserves in an international bank and by the annual expansion of the total money supply to meet a mathematically calculable annual increase in demand for money. This expansion should be distributed among the various nations in accordance with their needs.

Mr. Daltroff's book is devoted to an elaboration of the thesis that national industrial stability is comprised of two components —lateral stability between industrial groups and forward stability in the supply to the community of sufficient income to purchase the gradual increase of national production. Stability of both types may be achieved by the introduction of a gradually rising minimum wage. Stable exchange rates are necessary to international stability. International co-operation is needed to secure rising wages and stable exchanges.

How delightfully different from all this is *The Economy of Abundance*! Not that, from the pure economic standpoint, it is a good book. Hardly a page but has its economic howler. But Mr. Chase is thoroughly alive to the difficulties and complexities of the American world in which he lives. He is not even certain that there is a Way Out. Power—coal and hydro-electric —marches forward hand in hand with scientific invention; while puny mortals—bankers, industrialists, politicians—strive

to maintain or recreate that beneficent scarcity which the interlopers would annihilate. Meanwhile the metropolitan area, Megalopolis, develops into a city-state within the state. These are not new ideas: but they do concern deep problems of social development. *The Economy of Abundance* contains an abundance of ideas; and these must be its justification, for there is an economy of analysis. Nor can the book seriously pretend to offer any solutions of the problems raised. Mr. Chase suggests some rules for the guidance of a regulatory General Staff. But the fundamental questions, Who? and How? he (wisely) does not attempt to answer.

One-third of *The Money Muddle* is interesting and important; the other two-thirds are not. In the first part Mr. Warburg writes some bad and obsolete monetary theory which is as dull in content as it is bright in execution. In the second part he tells a vivid story of his associations with President Roosevelt and of his experiences as financial adviser of the American Delegation to the World Economic Conference of 1933. He explains that he felt forced to resign from that position because the President's anti-stabilisation and pro-commodity-dollar pronouncements during the Conference were radically different from the original instructions which the Delegation received. On his return to the United States Mr. Warburg was confronted by a variety of conflicting plans, policies and professors. Towards all these he takes a common-sense, cautious, and by no means illiberal attitude. But in the third part of the book he relapses into theoretical justifications which seriously detract from the force of the advice—conservative advice—which he has to offer to the great American public.

Mr. Docker undertakes to call other sinners to repentance. It is difficult to know what is required to convert a Douglasite from his Douglasism. When compared with the refutation of the Douglas theory (or theories) by Mr. Gaitskell in *What Everybody Wants to Know About Money*, Mr. Docker's work appears neither so elegant nor so dispassionate; but since neither of these qualities can possibly appeal to a devotee of Douglas, it may be that *Douglas Delusions* is the better suited to its purpose. In any case it is much the more comprehensive. There are pen-pricks for all the Major's works and for those of his chief supporters. Although convinced that he is dealing with "Arts Scribblative and Babblative," Mr. Docker takes his task seriously and accomplishes it effectively.

A. F. W. PLUMPTRE

University of Toronto.

The Menace of Recovery. By W. MACDONALD. (Macmillan. 1934. Pp. 401. 10*s.*)

Will Roosevelt Succeed? By A. FENNER BROCKWAY. (Routledge. 1934. Pp. 248. 6*s.*)

Mastering the Crisis. By IRVING FISHER. (George Allen and Unwin. 1934. Pp. 168. 5*s.*)

A Handbook of N.R.A. (2nd edition). Ed. by L. MAYERS. (Federal Codes, Inc. 1934. Pp. xxiv + 844. $6.50; with supplements to December 1934, $10.00.)

IF economic recovery in the United States were a matter of words written and spoken, America would be well on its way to prosperity. That such is not the case there is decisive evidence in persistently accumulating bank reserves and the almost total absence of new or even refunding issues apart from those of the Federal Government. Private investment, both on short and long term, is virtually at a standstill. Nor has spending for consumption increased beyond the standard to which the depression has accustomed the various classes in the country. A national real income of under two-thirds the 1929 total has been made to "go round": the process has successfully discouraged all expansion. After a more or less careful glance at their cards the individual players under the New Deal have in turn decided to pass.

This simple outcome of the programme of the Roosevelt Administration none of the four books under review contemplates. Concerned with different aspects of that programme and very unlike in scope and treatment of their subject, these books nevertheless all see in what has been taking place implications for the future of American economic development which the logic of events has already set at nought. This means, not that the books are valueless, but that their value is to the student of the history and psychology of the period rather than to those who seek an unmoved appraisal of the various phases of the experiment.

In *The Menace of Recovery*, after an admirably succinct account of the diverse measures of governmental intervention, Mr. Macdonald in his last pages looks fearfully at an obvious trend towards the reorganisation of American society on collectivist lines—more Fascist, perhaps, than Socialist but with features of both. He is right in concluding that there is no dictionary that defines recovery in terms of the fruits of the Administration's policy so far, but the "obvious trend" which is the basis of his fears is already vanishing, if ever indeed it had any reality.

Mr. Fenner Brockway, having made literally a flying tour of the United States and sketched vividly the panorama spread out before him, answers his question, *Will Roosevelt Succeed?* in the negative, but for reasons opposite to those of Mr. Macdonald. To him "President Roosevelt has approached his tremendous task without a social philosophy or the key to economic understanding." Fail Mr. Roosevelt must, because he is attempting "the task of sustaining an economic system which has outlived its day." Is Mr. Brockway's wish father to his thought? He sees and points out clearly (p. 227 ff.) the continued strength of capitalist control of American industry and the absence of any aim on the part of workers in general to overthrow the system. Yet, curiously, the logical inference escapes him that private enterprise in the United States is likely to alter little fundamentally in the near future for better or worse.

Mastering the Crisis, true to its title, strikes a more confident note. Famous as a preacher against slavery to a constant gold dollar, Irving Fisher hails as "the New Emancipation Proclamation" President Roosevelt's declaration (May 7, 1933): "The administration has the definite objective of raising commodity prices to such an extent that those who have borrowed money will, on the average, be able to repay that money in the same kind of dollar which they borrowed." The various official measures adopted to this end, as well as the general evils of a system in which contracts are fixed in dollars and dollars fluctuate in goods, are set out by Professor Fisher in simple language in the Little Arthur tradition. Although Professor Fisher truly assesses the gold purchase policy of the American Treasury in the autumn of 1933 as no more than a dramatic gesture in view of America's abolition of the gold standard, he still seems to believe that the devaluation of January 1934 must lead to a rise of internal prices, omitting to notice that the nineteenth-century chain of causation is broken to-day at many points. Again, although he is ready to recognise the familiar general proposition that decreases in the velocity of circulation of money may offset increases in its quantity, he seems blind to the ample evidence before his eyes that every actual or threatened attempt on the part of the government to depreciate the dollar by the expansion of its floating debt (whether in the form of Central Bank credit or notes or even greenbacks) has met defeat through reduction in the turnover of individual deposits and holdings of currency. Instinctively by this means business men and the general public have so far secured absolutely effective protection of the enhanced

real value of what has become their chief asset. Professor Fisher would meet this defence (which he does not recognise as such) by "a nation-wide application of Stamp Scrip"—special notes carrying a weekly 2 per cent. tax! Why not, one wonders, a 2 per cent. weekly tax on deposits? Reason would suggest, rather, that at present the most potent single means of stimulating ordinary outlay would be a convincing assurance by the government that it would not institute further deliberate bear raids on the dollar.

Another constructive step would be a declaration of policy with regard to the National Industrial Recovery Act which expires in June 1935. The able editor, Dr. Lewis Mayers, of *A Handbook of N.R.A.* (with semi-monthly supplement) says in his preface: "There has indeed sprung into existence in this half-year not merely a wholly new body of industrial law, but a vast new machinery of industrial government, both legislative and judicial. . . . Before our eyes, a vast state within our state is swiftly taking form." As a compendium of information on these matters this volume could hardly be excelled. Not only are the texts of the Federal and State Laws, the Codes and Regulations under them given, but also short histories and summaries of the different measures and a full comparative analysis of their respective provisions from the point of view of their constitutionality, the scope of their application, the principles they embody, and the machinery of their enforcement. The Handbook bears witness that the statement of its editor contains no exaggeration. But the effectiveness in operation and permanence of this superimposed Constitution for industry is another question. Let us not forget Prohibition! Dr. Mayers himself notes (p. 40) that the famous single mandatory section (7*a*) of N.I.R.A., that every code shall contain the condition that "employees shall have the right to organise and bargain collectively through representatives of their own choosing . . ." may be, and in interpretation has so far proved, quite meaningless. It is, moreover, by now generally admitted that although the work-spreading features of the scheme have led to some increase in numbers employed, the total real earnings of labour engaged in private enterprise have probably decreased—owing partly to the tendency for minimum to become maximum wages, partly to curtailment of hours, and partly to the use of those sections of the Codes relating to unfair competition for the purpose of forcing up retail prices. Labour is not pleased. The small entrepreneur feels handicapped, and the large entrepreneur is impatient or successfully recalcitrant. The

consumer offers passive resistance to shouldering the burden of increased unit costs. It would seem that N.I.R.A., if renewed, and the Codes under it, must undergo revision, as drastic as the Securities Act has already undergone.

The Roosevelt programme has to its enduring credit that it has fed and clothed and housed millions of American workers and their families during an unparalleled depression. It has probably also put a final end to child labour, and provided against the recurrence of certain financial and speculative abuses at least in their previous form. The drought, followed by some timely rains, has helped to accomplish the purpose and subordinate the untoward features of agricultural policy. The devaluation of the dollar is likely in the long run to prove advantageous. For these reasons, together with the important fact that the Government's borrowing policy has enabled the banks and the relatively wealthy in the absence of other attractive openings to acquire income-bearing investments secured upon the future taxable capacity of the country, the Roosevelt Administration retains public favour. Let it announce the continued maintenance of the unemployed by outright relief and by public works, the latter on a gradually diminishing scale. Let it renounce all *mala fastidia*. To its credit then might also be added ordinary industrial recovery. Signs of economic revival in the United States were not lacking in 1932. The present slow improvement in world conditions should foster it, granted a respite—which the composition of the new Congress makes all too uncertain—from ill-advised economic experiment.

M. TAPPAN HOLLOND

The Canadian Economy and its Problems. Papers and Proceedings of Study Groups of members of the Canadian Institute of International Affairs. Edited by H. A. INNIS and A. F. W. PLUMPTRE. (Canadian Institute of International Affairs, Toronto. Royal Institute of International Affairs, London. 1934. Pp. 356. 10*s*. 6*d*.)

THE Canadian Institute of International Affairs is to be warmly congratulated on the publication of this interesting and vigorous volume. We have had similar publications from the London Institute. It is of great importance that those concerned with the problems of British monetary policy should have in mind the special difficulties which beset the various parts of the Empire. Much has been heard recently of the sterling area; and it may well be taken as an obvious desideratum that

the whole Empire should form a part of it. If by this it is meant that its special opportunities for mutual monetary collaboration should be exploited to the full, in order to secure the greatest possible advantages that can accrue from such collaboration to the whole Imperial area, not only can no objection be taken to the project, but it is clearly one to be ardently supported and furthered. But if it is meant that the Empire should form part of a single monetary system with fixed exchange rates between its parts, then perusal of this volume may well give rise to reflections having a contrary tendency. For instance, it might well turn out upon investigation that in the event of a concerted drive for expanding output, greatest stress in this country should be placed on additional loan expenditure, while in Canada greatest stress should be placed—I am suggesting this as a possible moral for the reader and *not* as the conclusion of the authors of the present work—on raising the price level of her exports by devaluation.

The Canadian Economy and its Problems is divided into two parts. The first consists of studies contributed by experts on various features in the Canadian economic background, the second of papers presented to a study group of the Canadian Institute, together with reports of discussions to which they gave rise, relating to the specific problem of central banking.

The former section is prefaced by an invigorating essay by Mr. H. A. Innis on the implications for political and social philosophy of modern economic trends. It is packed with interesting ideas; the developments which suggested them are still too near for the author to have been able to reduce them to systematic form. There follow chapters on the wheat problem, the mining industry, newsprint, public finance, the railways, the depression in Saskatchewan, monetary policy, the trade cycle and other topical subjects of fundamental importance. These are mainly descriptive, but various proposals are suggested in passing. For instance, Mr. D. C. MacGregor who writes on Public Finance, would like to see the National Debt converted on to an " equity " basis, so that the yield of Government stock would automatically vary with changes in the national income and the price level (p. 60). This would accommodate " overhead " burdens to the state of trade. Mr. Buchanan, on the other hand, considers a proposal, similar in principle, for linking railway rates to prices, and pronounces against it (p. 84). In fact, the case for flexible railway rates seems the stronger of the two, for in the short period railway rates are a cost in a more direct sense than taxation.

Mr. Plumptre, who contributes a chapter on money in the first section, takes a stronger line than most of the members of the money group, whose report constitutes the second. He does not think that Public Works policy would contribute much in the special circumstances of Canada; he regards the price level of exports as of crucial importance and is prepared to go far in maintaining it by exchange regulation.

The chapter on the Constitution is of great interest. The clause of the British North America Act reserving the subject of "property and civil rights" to the provinces has been so interpreted by a series of judicial decisions in recent years as to be a grave obstruction to central economic policy. An amendment seems clearly called for.

The second section deals with topics similar to those discussed in *The International Gold Problem* of the London Institute, but with special reference to Canada. As may be expected, a divergence of views appears. Public works are on the whole favourably regarded; but a balanced budget is considered to be of primary importance. Against a background of feeling that there is an urgent need for vigorous action, the contributors become somewhat timid and conservative in working out the details of monetary policy. They do not grasp the nettle. They implicitly leave the more fundamental work of reconstruction to some other—unspecified—department of economic planning. But that is always the way!

The editing is excellent. The parts are well-balanced, the subject-matter is uniformly of a high level of interest, and the whole is most readable. The contributors are well-informed and their method of approach lucid, virile and straightforward. It will richly repay the attention of students of monetary policy or of inter-imperial economic relations. R. F. HARROD

Foreign Investments in China. By C. F. REMER. (New York: Macmillan. 1933. 8½″. Pp. 708. 25*s*.)

"FOREIGN Investments in China" are of considerable interest alike from the points of view of business, politics and economic theory; and Mr. C. F. Remer has rendered a public service by undertaking painstaking and careful researches whose results he has published under this title. He has here compiled, classified and analysed the different categories of investments, explaining their origin, amount, distribution and any special features in each case. He reckons their total value in 1931 at about (U.S.)

$3,300 million, which is twice as much as in 1914 and four times as much as at the beginning of the century. Great Britain holds the highest proportion, being still somewhat ahead of Japan, whose trade, however, has outstripped hers and whose resident population exceeds that of all other foreign countries put together. Politically the subject is equally important, since any tension between the external powers, or between one of them and China, is bound to find its expression, and likely to find its origin, in some one or other of the foreign investments.

From the economist's point of view the problem of China's balance of foreign payments, the standing enigma of her economic situation, is of especial interest.

China has for the last three years had an adverse balance of payments. This is easy to account for. What is much more puzzling is the large positive balance which she enjoyed before, as measured by the net import of precious metal. The balance of visible trade has always been adverse in modern times, but in spite of this the invisible exports and capital import brought a total of some (Chinese) $1,000 million [1] of net silver imports into the country in the first thirty years of this century, and in the three years 1928–30 the average annual net import amounted to (Chinese) $140 million. Since then, and especially in 1934, there has been a large net export, but it is the earlier period with which Mr. Remer is dealing. He has carried the study into the baffling problem further than any previous writer, though the able reports of the Bank of China have since thrown more light on several of the most important factors, especially the "overseas remittances" from Chinese residents abroad. Mr. Remer's estimate for the year 1930, the latest analysed in his book, is as follows :

Out-payments.	(Millions.)	In-payments.	(Millions.)
(*a*) Government Debt . .	$111·4	(*a*) Overseas Remittances .	$316·3
(*b*) Business Investments .	198·0	(*b*) New Investment . .	202·0
(*c*) Merchandise Imports (recorded) . . .	1,964·6	(*c*) Merchandise Exports (recorded) . . .	1,342·3
(*d*) Miscellaneous Chinese Payments abroad .	42·0	(*d*) Miscellaneous Foreign Expenditure in China.	218·0
	$2,316·0		$2,078·6

It will be noted that these items, so estimated, show an excess of out-payments over in-payments of $237·4. In spite of this, however, there was a recorded net import of the precious metals of $75·6 (silver imports $100·5 million, gold exports $24·9 million).

[1] Dollars are Chinese except where stated to be U.S.

There was, therefore, a difference to explain of no less than $313 million. Mr. Remer reduced this to $290·5 million by allowing $22·5 million for unrecorded gold exports. In view of the gold exports from Hongkong that year (when the gold embargo was first enforced), I think this estimate is fully justified, and that if anything it is under the mark. He next proceeds to allow 10 per cent. for under-valuation of exports, thus reducing the difference to $156·3, which he declared himself unable to explain. I feel, however, that it is difficult to make this allowance, for though there was certainly some under-valuation of exports there was also some under-valuation of imports, and I know no reason to think this was of a smaller order of magnitude; and in addition merchandise imports were smuggled in on a considerable scale, whereas smuggling of merchandise exports was comparatively small. Mr. Remer has therefore failed to trace the origin of favourable items amounting to some $300 million; and he has thus failed to find the solution of the mysterious problem of China's positive balance of payments up to 1932.

I have always thought that Mr. Remer greatly under-estimated the amount of the overseas remittances up to that date; and subsequent information tends to confirm this view. But much too little is still known of this extremely important factor in China's accounts. It is a question that would well repay further study, for in the present situation the possibilities of some recovery in these remittances is of the first importance to the whole of China's balance, and may make the decisive difference as to her future currency policy.

The treatment of this question illustrates both the merits and the limitations of Mr. Remer's book. His penetration is not equal to the patience of his research. Nevertheless, his book is a useful one and all those who are interested in China are likely to find it for long to come the most useful storehouse of well-arranged information in the field it covers.

ARTHUR SALTER

The Social Survey of Merseyside. Edited by D. CARADOG JONES with the assistance of J. E. MCCRINDELL, H. J. H. PARKER and C. T. SAUNDERS. Secretary: N. L. HUME. Vol. I, pp. xxii + 328, 15*s.*; Vol. II, pp. xvi + 413, 21*s.*; Vol. III, pp. xviii + 560, 25*s.*; set of three volumes, 45*s.* (University Press of Liverpool; London: Hodder and Stoughton. 1934.)

THE completion of 1357 pages of closely packed evidence of social conditions in a highly specialised shipping area impels the

Director of the Survey to meet the inquiry " What is the good of it all ? " in his preface. His own reply is, " To get some idea of the nature and extent of the problems to be solved," this being the indispensable first step to effective reform. Much more appears to be both attempted and achieved. The three volumes combined give an accurate statement of the nature and extent in Merseyside of the problems of population, immigration, overcrowding, poverty and housing (Vol. I); unemployment, its local causes and effects, the mobility of labour, and the industrial prospects for the area (Vol. II); and the available public means of meeting distress and preparing individuals of all ages for social life (Vol. III). They contain exact information of the existing measures through which the almost overwhelming difficulties of the area are being engaged. They estimate in figures the success or failure of the treatment, and they contain more than a hint of the means for dealing with unsolved evil.

From such a survey an occasional illustration only is possible. One problem from which the British public has persistently turned its face is that of mental deficiency. In a stumbling attempt to be kind it educates the mentally defective children of mentally defective parents at a cost twice that of ordinary education, then releases them to take their place as free citizens. According to the Survey, out of 715 cases traced of young persons thus released, nearly 20 per cent. were in institutions or placed under supervision, a further 20 per cent. were recommended for supervision, 10 per cent. had died, and of the remainder, many were partly maintaining themselves in the home so that they were not " too great a burden on the families." Being free, many marry, and their fertility appears to exceed that of other classes. In " defective " families the average number of children born per family is shown to be 7·16 as compared with 3·92 for ordinary working-class families. Typical pedigrees are quoted as evidence of the transmission to children and grandchildren of the tendency to mental deficiency. Statistical tables are given in support of the general contention of Dr. Tredgold, that " strictly speaking there is no such thing as the inheritance of mental defect or insanity; what is inherited and what is transmissible is a pathological germ material, in other words, the neuropathic diathesis. In some families I have been able to trace the origin of this diathesis and its progressive increase, generation by generation, until it has culminated in mental defect."

The Director of the Survey states that the Departmental Committee on Sterilisation invited him to give evidence. His inquiries entitle him to speak, and enable others to perceive not

only " the extent and nature of the problem," but also the urgency of discovering the adequate remedy, and the number of generations of difficulty which will yet have to be endured as a result of past refusals to face the issue.

The investigators seem to possess an unerring instinct for placing a finger on the unexpected, and most significant, factors of social distress. " Broken families " are said to represent as much as one-sixth of the households in the area, and give rise to the chief problem of maintenance. " Broken families " are defined as those without a male adult breadwinner, the cause of their state being the death of the husband (62·3 per cent. of the cases), his retirement (9·4), disability (5·7), absence (0·9), desertion (3·2), separation (2·4), or divorce (0·1), or the non-marriage of the head of the family (16·0). A statistical picture is given of the extent to which widows' pensions, separation allowance, workmen's compensation, old-age pensions, public assistance, unemployment benefit, payments by lodgers, sub-letting, health insurance, war pensions, and personal savings assist in sustaining these maimed groups.

Another chief discovery relates to the unemployed. A calculation has been made showing that of the total surplus of labour in Merseyside, 48,000 may be attributed to the world depression, and 26,010 to local factors peculiar to Merseyside—this latter part being the measure of the unemployment which would persist even though there were a general return throughout the country to conditions prevailing in 1929. This situation is grave enough. But the further discovery is made that there is to be an inflow into industry of new entrants from school, in excess of the number retiring through old age, of 76,000 during the five years following the date of the Survey. In other words, an area which is ranked among the most depressed in the country is menaced with a more than doubled surplus of labour in five years due to the flood of new workers leaving school. The authors of the report must have exercised great restraint in making no reference at this point to the school-leaving age.

Of the three volumes, the last will hold most interest for all whose approach to social science is through biology, education or administration, *i.e.* whose concern is with the treatment of the individual rather than the economic causes which underlie his condition. It is here that consideration is given to the influences for good or evil which affect infants, school-children, adolescents, families in various situations, pensioners and the aged, and sub-normal types such as the deaf and dumb, the blind, the mentally

deficient, the physically defective and the destitute. The authors consider it to be no scientific weakness that the extreme case receives more attention than the normal, since through the examination of the abnormal light is more readily thrown on causes and probable cures.

To the economist the second volume is of chief interest. It contains an all-inclusive survey of the industries of Merseyside from the point of view of their present employment capacity and their prospects of recovery. The conclusions regarding the future are very tentative, but the authors appear to have left no stone unturned in their attempt to discover the possible grounds of revival. The key to the industrial situation in Merseyside is the total quantity of goods, *i.e.* imports and exports, which pass through the Mersey, for this determines directly or indirectly not only the amount of shipping and land transport needed, but also the extent of new construction, shipbuilding, repair work, warehousing and merchanting, together with the possible subsidiary activities of rope-making, sack and packing-case and wood manufacture, and hotel and passenger supply industries. But whereas it is the *total* quantity of both imports and exports which has the most direct effect upon local conditions, an important indirect influence is the *proportion* which exports bear to imports. Until 1930 exports were almost equal in value to imports, a fact which conferred the advantage upon shipping of being able to carry full cargoes on both the inward and the outward journeys. In 1931 exports fell to 44 per cent. of the whole; and losses were incurred through inadequate cargoes on the outward course. The inference from this is that whereas a tariff policy must injure Merseyside by checking both imports and, indirectly, exports, a low exchange policy will assist by stimulating exports and causing them again to balance imports. A calculation at the end of this volume shows that more than two-thirds of the employed population of Merseyside are engaged in industries which must be injured by a national policy of protection.

Certain sections of the Survey have been reprinted from previous publications, and it appears that in the new form the reader is given rather less assistance in making inferences, a fact which strengthens his belief in the scientific value and absence of bias of the work. The thought persists, however, that those who have undertaken this immense labour are the most fitted to form conclusions and that society would be still more in debt to them if in a subsequent work they would make known what is their considered view on remedies. J. R. BELLERBY

World Economic Survey. Third Year, 1933–34. League of Nations, 1934. (Allen and Unwin. Paper 6*s.*; cloth 7*s.* 6*d.*)

A REMARKABLY high standard of performance in a decidedly difficult enterprise has been achieved by the Economic Intelligence Service of the League of Nations in their annual World Economic Surveys. The present *Survey* (for 1933–34), prepared by Mr. J. B. Condliffe, is the third of the series. As a work of reference it is indispensable to any economist who desires to form a tolerably well-informed picture of the events of the depression throughout the world. Nowhere else are the essential facts and significant developments described so fully or arranged so conveniently as they are in this volume. But it is much more than a work of reference. Thanks to a happy tradition established in its early days, the Economic Organisation of the League has always known how to wear its officialdom with a difference; and this *Survey*, while maintaining all due discretion, and refraining carefully from any observation that could be regarded as a criticism of the policy of particular Governments, is not rendered jejune and colourless by the exclusion of all matter that might be deemed controversial. The attempt is made to appraise the significance of the different tendencies at work, to disentangle underlying causes from the more obvious factors near the surface, and to suggest tentatively some of the conclusions which appear to follow from the experience of recent years. The point of view from which the volume is written emerges fairly clearly. It is the point of view of one who regrets "the revolt against the related systems of democracy, *laissez-faire* and internationalism," and who is sceptical about modern experiments in State regulation and planning, regarding them as "likely to diminish the aggregate efficiency of the economic system." But though a trace of bias may be discernible here, it is no more than is required to make the *Survey* a readable and stimulating as well as a laudably objective volume.

The general picture which the *Survey* presents is that of what may be termed a natural tendency towards recovery throughout the world, complicated by the various reactions of the divergent policies of Governments in different countries. The former tendency is attributed to "the widely diffused efforts of individuals and of groups to adjust their particular activities to the new economic conditions," and the point is made that these efforts of individuals "are very important in the aggregate," though, being less spectacular than the acts of Governments, they do

not receive so much attention. Stress is laid in particular in this connection on the world-wide phenomenon of—

> " an extensive overhauling of private enterprise, involving much liquidation and reconstruction, adaptation of processes and improvement of management. Such efforts of private enterprise to reorganise more efficiently have been among the most powerful forces making for economic recovery in recent months."

But the operation of this tendency has been " confused by two important sets of forces derived from Governmental policy." The first of these relates to monetary policy. There is a striking contrast between the fortune of the countries whose exchanges have depreciated in recent years and that of those who still cling to their gold parities. Depreciation may have helped the former countries to recover, but at the expense of aggravating the difficulties of the latter. The second set of forces " consists of the various movements towards a greater degree of Government planning and control both of industry and of trade." Great Britain has relied " primarily upon a lowering of interest rates, accompanied by budgetary economy." In Germany, the United States and Japan, on the other hand, the Governments have sought actively to stimulate production by peculiar experimental policies of which interesting accounts are given in some detail. But though the policies pursued have been widely different in different countries, a common trend is discernible everywhere towards more ambitious schemes of State regulation.

This general movement towards Governmental regulation has been associated with a multiplication of restrictions upon international trade, and the *Survey* suggests that this association is inevitable. For " the regulation of national industry presupposes a measure of planned control over external trade, and all trade restrictions of this character naturally react upon national production." Accordingly, " the long-run tendency of nationally planned and regulated production is clearly towards less international differentiation and co-operation and the loss of those advantages which spring from territorial division of labour." It follows that the planning policies of Governments, like their exchange policies, are working to some extent against each other, and against world recovery. The *Survey* expresses the hope that economic recovery may lead to some mitigation of the new restrictions on international trade; but its hopes are not very large or very confident in view of the " changed régime, the altered

social and political environment in which economic life now functions."

This phrase occurs in an interesting chapter on "The Changing Economic Order." Attention is called to the decline that has taken place throughout a large part of the world in the growth of population, though a cautious view is expressed as to the early prospect of a reduction of numbers. Upon this point, the *Survey* appears to attach an exaggerated importance to the influence that might be exerted by a fall in infantile mortality rates; and though its immediate inference from this possibility, namely that "any actual decrease of population may be deferred much later than some forecasts portend" is not unreasonable, the further conclusion is surely unwarranted that "the populations of the industrialised countries of Western Europe appear to be stabilising." The *Survey* recognises that the cessation of the growth in numbers has an important bearing on the economic problem:—

> "A population which is approaching a stabilised maturity will develop economic demands very different from those of a rapidly expanding community. In particular, the consumption of elementary necessities will not greatly increase, though there will be a strong tendency towards extending their variety and improving their quality. New foods come into use, the range and quality of clothing are much improved and the standard of housing also is raised; but for the staple foods and the commoner articles of general consumption, demand lags behind the increase in wealth. On the other hand, there tends to be a rapidly widening demand for more costly goods of durable consumption and also for the personal services, and for the perishable consumption goods which often are connected with the new durable goods, such as motor-cars."

These changes, it is argued, have already made themselves evident in the period preceding the depression; and it is implied, though at this point the chain of reasoning is not very clearly developed, that, together with other factors, they have played a part in creating that change of environment which is promoting greater Governmental regulation and the insulation of national economies.

H. D. Henderson

All Souls College,
Oxford.

Codes, Cartels, National Planning: The Road to Economic Stability. By Dr. Bruno Burn. (McGraw-Hill Book Company, New York and London. 1934. Pp. 413. 24*s*.)

This book is an investigation of the American Recovery Programme in its industrial aspects, and especially with reference to the Codes, by one who has been engaged for twenty years in the field of Cartels and Trade Associations in Germany, and who finds the significance of the New Deal in its tendency to develop in the same direction in America. The author is a strong supporter of the Cartel model as an instrument of economic stabilisation, if it is accompanied by an adequate control over trade practices, such as the Codes include; but he thinks that, in order to prevent damaging reactions of one Cartelled industry upon another, the Codes must be integrated into a single scheme, subject to the final oversight of a national Code Council. Failing such integration we have the "planlose Planwirtschaft," of which much has been said by other writers.

In the course of this argument, Dr. Burn gives an interesting account, supplemented by specimen documents, of the way in which the Cartel model is now working in Germany. It appears from this that the Cartel, like the push-bicycle, attained its developed form nearly a generation ago, for there is little that is new in Dr. Burn's authoritative exposition. The refusal of America to allow the Cartel now appears as a mistake, which drove industry into less stabilising types, which created more trade practices than they eliminated.

Also incidental to the argument is a review of the system of free competition, its presuppositions, its relation to the pioneer stage of national evolution, and of course its defects. But in a later chapter he holds that such competition has "long ago (how long?) ceased to be a reality," and he presents a picture of industrial processes as a "balance of restraints." I think that the continuity of industrial change of system is never adequately recognised in these accounts of our old hack-block *laissez-faire*. It is better to speak of the stage of free enterprise, which adopted changing forms, than of that competition which has collected so many adjectives, Dr. Burn's favourite being "rugged." The reason why we cannot "go back" to the enterprise of even 1914 is the not obscure one that that was twenty years ago, and that time is irreversible. Dr. Burn rightly draws attention to the "vertical spiral" of industrial change. The question, now as always, is what we are to go forward to. How much enterprise,

how much regulation, how much socialisation, are called for by the whole general changes of technical, social and administrative knowledge—this has always been the problem of policy.

Much of Dr. Burn's argument is devoted to the question of adjustment. The system of free enterprise was not, in my view, correctly described as one which assumed "self-adjustment." It assumed multiple adjustment, quite a different thing. Dr. Burn is well aware of the problems that lurk in the idea of "adjusting the supply to the demand" by making price an instrument instead of an index. Such plans must substitute for multiple adjustment a very complete knowledge at the centre of a large number of variables, and a constant supervision and willingness to experiment both upwards and downwards, if there is to be any confidence that the planning body knows all that it is about. For this purpose Dr. Burn desires that the fully Cartellised system which he favours should include, as an essential part, the co-operation of the voluntary Trade Associations.

One cannot read this and similar studies of the New Deal without feeling that America is being credited with a Planning endeavour, when the fact is rather that, having failed to make plans in advance of the Depression, she has been caught without them, and has to make them in great haste. This very haste is the dramatic feature of her present activity, while Great Britain, which had prepared herself by Trade Boards and National Insurance years ago, is not credited with a New Deal, since in this country it is now an old one.

The plan of Dr. Burn is that the Codes shall be linked to Trade Associations in every trade, creating Code Associations. In order to meet the problem of inter-trade adjustments, these Code Associations are to be integrated for general supervision into Code Groups for each industry. Thus coal-mining would have a Code Association, and mining a Code Group. Over the Groups would be Code Federations for industry, banking, wholesaling, retailing, and so on. And over all the Code Council. This is a formal plan; but the interest of Dr. Burn's study is his discussion of the measures to be taken to maintain a real elasticity in the supervision, however far it goes, which is to be the substitute for multiple adjustment.

D. H. MACGREGOR

All Souls College,
Oxford.

Wirtschaftliche Konzentrationen, Konjunkturwandel und Krisen. By Dr. O. Brendl. (Berlin: Carl Heymann. Pp. 79.)

The principal interest which this book has to its readers is that it is an attempt to treat the same problems which have been dealt with in recent theoretical works on the influence of industrial combinations to social product and trade cycle. Brendl, on the other hand, is an exponent of the science of business management (*Betriebswirtschaftslehre*) and therefore is afforded a good opportunity of justifying the reproaches which his science has levelled against the theoretical economists for their abstractions and their preoccupation with assumptions and definitions. But unfortunately his different approach is not very helpful. His refusal to rely upon the accepted results of previous research leads him into a lot of useless discussion out of which conclusions and classifications emerge which could easily have been derived directly, *e.g.*, from *v. Beckerath's* classification of industrial concentration. His refusal to isolate by abstraction the tangled factors which influence his problems lead him into confusion rather than into reality; and this impression is aggravated by a disconnected style of writing. Moreover, his conceptions are by no means clear-cut; for instance, he fails to make the very important distinction between production costs and marketing costs. Thus, on his terminology, a joint advertising agreement between otherwise independent producers must be called a Trust, because both costs and prices are affected. There is also some thin ice in his argument about the cumulative effect of surplus gains (p. 22). There is clearly a duplication here; we may have a surplus gain, or a decrease in accounting costs, but not both, because the gain is absorbed in the reduction of cost.

The main thesis of the book is that those combinations are desirable which tend to bring down production cost, while those are not to be desired which increase gain by raising prices (pp. 59–60). This may sound reasonable to the practical business man, but as an argument in a *general* form is quite incorrect. Both a reduction in production cost, if obtained by cheapening of production factors, and an increase in prices constitute, prima facie, a transfer to the monopolist in the one case from the owner of the production factors, in the other case from the consumers, who may, of course, be the same persons. The author's treatment of the trade cycle is insufficient. He has dealt with the influence of industrial combinations on the individual phases of the trade cycle, but he has not gone to the root of the problem and investigated its influence on the initiating forces and the

necessary recurrence of the trade cycle. If this is to be the response to the "*Hic Rhodus, hic salta!*" of economic theory to its critics, then it is not a very spectacular jump.

H. W. SINGER

Seasonal Variations in Industry and Trade. By SIMON KUZNETS. (New York: National Bureau of Economic Research. 1933. $4.)

ASSEMBLING a great inventory of data, Dr. Kuznets sets out to answer two main questions: how is the pulsation of a seasonal flow connected with non-seasonal activities above or below it in the sequence of productive processes? and what changes in the patterns of seasonal variation have accompanied the changes, secular and cyclical, in the American economy since the War?

The problem raised by the first question would still be present in a "stationary economy," and here accordingly Dr. Kuznets seeks the one pattern that is most representative of conditions throughout the period. His method is to compute monthly relatives to a moving average, and then to compare the different indexes that can be formed by taking the mean of different numbers of central items in the array of relatives for each month; by this comparison he is led to select one such index as best representing the general movement, but he does not finally adopt it until he has compared its value for each month with the sequence of relatives computed for that month year by year. Such a method is admirably tentative: there is no tipping of data into the hopper of an algebraic machine; changes regular or irregular must be brought to the eye. The index thus obtained provides the main material for a study of four productive groups, selected as illustrating the incidence of seasonality at different points in the flow from raw material to consumption. This study is a great achievement in field-work, yet the inquiry is not pushed very far: the questions raised could indeed be fully answered only by special studies of the several industries; and the very width of the whole survey forbids more detailed treatment of one part. One might, however, wish that even within its necessary limits the work had here been more brought together—that there were tables, for example, to show how the ownership of stocks of crops changes month by month; that the seasonal movements of prices had not been treated apart from those of the corresponding quantities; or that the question of what decides who shall carry the stocks had not been left to suggestive but brief remarks in a later chapter.

Dr. Kuznets' study of the second question leads him to conclusions which are of importance to the student of cyclical fluctuations, and of which we must here give some indication, even at the cost of passing over the very interesting statistical methods by which they are reached. Broadly speaking, the evidence enables Dr. Kuznets to conclude that in the United States in the fourteen or fifteen years after the War the seasonal pattern in the processes nearest distribution has become more like that of demand: where demand is seasonal these processes have become more variable; where it is non-seasonal they have become steadier. In each case the immediate cause seems to have been the decision of distributors to buy from hand to mouth rather than carry stocks, and this decision in turn may be attributed to two factors: the loss brought by stock-carrying in times of falling prices, and the widening empire of fickle style and fashion. In each case again the burden has been thrown farther back; but where the effect has been to increase seasonal variation, this burden has taken the form not of greater stocks but of excess equipment, sufficient to the peak and too great for the average. The availability of this equipment is in part ascribed to the release of funds through the reduction of stock, but is also promoted by the advance of technical improvement, and by the low level of average output in a slump. From these suggestions it follows that trade depression tends to bring an increased seasonal burden. In considering the relation between seasonal and cyclical variations, Dr. Kuznets further points out that the stocks necessitated by seasonal flows may delay the passage of stimuli through the system, and so lead to an accumulation of tensions; that when the stimulus comes to be transmitted, those who supply stocked goods may experience the same magnification of variations as do those who supply fixed equipment; and finally that the influence of a cyclical stimulus will be modified by the seasonal phase in which it appears.

Dr. Kuznets' book contains much more than this notice has described; its tables of indexes and of sources give it the greatest usefulness in further research; one cannot read it without admiration for the completion of a great task of organisation, for a patient and cautious study of detail, and for an exposition always orderly and clear.

E. H. Phelps Brown

New College,
Oxford.

Brynmawr: a Study of a Distressed Area, based on the results of the Social Survey carried out by the Brynmawr Community Study Council. By HILDA JENNINGS. (London: Allenson & Co., Ltd. 1934. Pp. xi + 246. 10*s.* 6*d.*)

IT is widely known that some five years ago the Society of Friends formed a small settlement in Brynmawr to give assistance in the prevailing distress in the South Wales coal-field. It is probably less well known that one of the first actions of that group was to encourage a stock-taking of the existing circumstances and resources of the community that it was setting out to help. The group which conducted this survey, though stiffened at one or two points by persons from outside Brynmawr, was almost entirely drawn from the inhabitants of the small town itself. The chairman of the Council for this whole study was an unemployed miner. A study of the health and housing of the town was made by a group which included among others a schoolmaster, a nurse and the local surveyor and sanitary inspector. Transport facilities were studied by the stationmaster, two garage proprietors, a postman, and an official of a bus company, with a miner as secretary of the group. The financial position of the town was examined by the branch-managers of two of the Banks, the postmaster, the manager of the Co-operative Stores, with the headmaster of the Boys' Council School as secretary. A study of the industrial history and possibilities of the place was made by a group which included among others a colliery manager, a retired boot manufacturer, the assistant manager of the Employment Exchange, four miners, and Miss Jennings herself. Each of these groups contained lay members other than those mentioned, and other similar groups studied other aspects of the general problem.

These various reports have been edited for publication by Miss Jennings. It is no disparagement of her editing to say that in many ways the original documents, overlapping as they inevitably must, and too long for publication as they stand, are even more interesting than the necessarily condensed and summarised version which she has been obliged to give us. For they represent a unique achievement in collective effort by a small community. Out of this material Miss Jennings has made a fascinating book, and the highest compliment that the reviewer can pay to it is to say that it led him to visit Brynmawr himself, and to compare on the spot the published version with the reports themselves.

Brynmawr is essentially a product of the industrial revolution. At the end of the eighteenth century it was no more than a bleak hill-top on the road from Merthyr to Abergavenny. But in the following years industry grew rapidly. The earliest products were iron-ore and limestone for the neighbouring iron-works at Nantyglo, Beaufort and Clydach. The local blackband ore was by contemporary English standards comparatively rich and for the first half of the nineteenth century the neighbourhood was prosperous and expanded rapidly. Coal began to be worked not only for the use of the iron-works but also for sale. Through the early railway age prosperity continued and increased, but by the middle of the century the richer local ores were becoming exhausted, the poorer remaining deposits could not compete with the far richer imported ores of Spain and Sweden and even of Northamptonshire. By 1865 imported ores were one-third of the local product. By 1878 they were four times, and in 1890 a hundred times the local product. The iron furnaces, in face of the competition of works farther down the valleys and at the coast, gradually collapsed and perished, and for the thirty years from 1850 the town steadily declined. Then the growing demand for coal both for consumption and for the neighbouring steel industries in the Ebbw Vale brought a renewed period of activity and further immigration of workers. The coal measures outcrop a few miles to the north of Brynmawr. The coal was close to the surface, and easily and cheaply worked. It was exploited by a number of small undertakings which took the best and left much behind, which worked with little system and kept few records for future generations of what they had done. By the end of the war a hundred years of exploitation had virtually exhausted the coal. All but a few of the local collieries were closed down in 1921 and never reopened after the great strike of that year.

From 1921 Brynmawr, with a population of about 8,000, has been a dormitory for men working in the neighbouring coal valleys. Already in that year 2,046 out of 3,230 persons were working outside the town. About half of these worked in the western valley of Monmouthshire and another 40 per cent. in Ebbw Vale. But with growing depression in these areas work has been concentrated on the local population, thereby securing the rents of colliery houses and the reduction of local rates. The Brynmawr residents have suffered increasingly and by 1929 only 563 found employment outside the town. At the end of that year 59 per cent. of all miners in the Employment Exchange area were unemployed, and 72 per cent. of those over forty years of age.

Thus even in the derelict area of the north end of the Welsh valleys Brynmawr was exceptional.

The Society of Friends decided, therefore, to concentrate their efforts in Brynmawr rather than diffuse them over the coal-field as a whole. Their success is not to be measured merely by the tangible results, remarkable as these have been. Their attempts to create new industries to take the place of the old have indicated difficulties which neither they nor others could have foreseen, and their experiences are a most useful guide to all who may be seeking to tackle this problem. Mr. Scott and his collaborators would be the first to admit that the establishment of new industries is a far more difficult task than they had originally imagined.

The statistical results of the inquiry cannot even be summarised adequately in a review. The materials collected by the Financial and Industrial Groups in particular afford valuable opportunities for further analysis. For this is almost the first study in this country of a small community treated as a unit. Such studies have provided the foundations on which almost the whole of Indian economics has been written. Similar inquiries are now being made in Africa. It is much to be hoped that the inspiration to make further studies in this country may be derived from this most interesting experiment in self-analysis. For much of the material collected at Brynmawr will gain its full significance only when we have similar data for a healthy town of similar size with which to compare it.

AUSTIN ROBINSON

Sidney Sussex College,
Cambridge.

The Shorter Working Week. By DR. H. M. VERNON. (London: Routledge & Sons. 1934. Pp. viii + 201. 8*s.* 6*d.*)

IT is now fifteen years since any substantial reduction in the hours of factory work has taken place. Meanwhile work has certainly intensified. There has been speeding up of machines and conveyors, speeding up by new methods of wage payment, such as the Bedaux system, and by stricter methods of supervision and record-keeping, and there is also a "loading up" taking place; for instance, more looms per weaver. Under these circumstances the time is ripe for a revision of working hours; and Dr. H. M. Vernon's book is to be welcomed as a detailed survey of one particular plan for shortening hours and maintaining wages, without necessarily increasing the cost of production. He writes "with special reference to the two-shift system."

The economic argument for working shifts was first brought before the general reader by Lord Leverhulme in his *Six-Hour Day*. It has recently been restated by a committee of the British Section of the International Association for Social Progress (of which Dr. Vernon was a member) in a short pamphlet entitled *New Aspects of the Problem of Hours of Work*, obtainable from the Secretary of the Section at 15 Sheffield Terrace, W.8. Dr. Vernon in the present book collects much further information, but does not go as deeply into the economics of shorter hours, and steers clear of any definite pronouncement upon their use as a check to unemployment. In his first chapter he confines himself to the facts of unemployment and the increasing productivity of labour as summarised in official statistics; his second chapter describes various manifestations of rationalisation; and his third chapter, surveying very usefully the types of weekly hours now worked, introduces us to the shift system. There is a brief reference here to the saving in overhead costs per unit of output when the plant is run longer hours, but the matter is not pursued. With the exception of a final chapter on the problem of leisure, the remainder of the book deals mainly with the observed results of women and young persons working upon the two-shift system, when this was granted by Home Office orders under the Act of 1920. The procedure adopted under this Act is described in Chapter IV; the result upon output, lost time and health in Chapters V and VI; and the resultant opinions of the workers, their managers, supervisors and parents—and their organisations—in Chapter VII.

Valuable evidence, collected by Dr. Vernon when investigator for the Industrial Fatigue Research Board, is given in detail about the sleeping and feeding habits of shift-workers. When the morning shifts began as early as 6 a.m., as they did in three of the factories investigated, the median hours of sleep obtained were as low as $6\frac{1}{2}$ or $6\frac{3}{4}$; but in a fourth factory beginning the morning shift at 6.30 a.m., $7\frac{1}{2}$ hours' sleep was obtained. Apparently there is a fixed time for going to bed regardless of the time one has to rise next morning. Breakfast as well as sleep will also suffer from too early a kick-off. Thirty-two per cent. of the workers in three factories starting at 6 a.m. had only tea or nothing at all; but all the workers in the factory starting at 6.30 a.m. took drink and food for their breakfast. Thus it matters vitally when the morning shift is timed to start. The possible working hours allowed by the Home Office might perhaps be changed with advantage from a range of 6 a.m. to 10 p.m. to one of 7 a.m. to 11 p.m.

Dr. Vernon's general conclusion is definitely in favour of the shift system. Hours are shorter yet output almost as high and there is little evidence of impaired health. What objections are raised Dr. Vernon considers to be the result of objections to *any* change; as soon as workers have become accustomed to working shifts they prefer not to change back again. Even those starting work at 6 a.m. can, in Dr. Vernon's view (p. 125), "gradually acquire the habit of eating a good meal if they persist in the effort." Dr. Vernon has rendered signal service to the shorter hours movement in showing that there is little or no social and medical disadvantage in the shift plan to set against its undoubted economic advantage where, as in most modern industry, fixed capital charges run high.

P. SARGANT FLORENCE

University of Birmingham.

Unemployment Funds: a Survey and Proposal. By HUGH H. WOLFENDEN. (Toronto: The Macmillan Company of Canada. 1934. Pp. xviii + 229.)

MR. WOLFENDEN is concerned not only with unemployment insurance, but with all types of funds for assisting the unemployed, including public relief, though this is only slightly touched upon. The other methods include Compensation, where, as with our own Workmen's Compensation Acts, the whole responsibility and cost fall upon the employer, of which there are some instances in U.S.A. and Canada, and the three types of Savings plans, Employer Reserves and Pooled Reserves, provided by individual firms and groups of employers respectively, and Employee Savings. Instances of these methods, in fact, come nearly all from America, the European schemes being mostly based on Insurance or on Insurance cum Relief. The savings schemes of all types often provide for joint contributions by employers and employed.

The book is arranged to deal with the different schemes by countries, with sub-grouping for various types of plan. Much information is given, which should be specially valuable in supplementing and bringing up to date Dr. Gibbons' work on Unemployment Insurance. There is, for instance, a useful treatment of the present position of schemes of the Ghent type. Most attention is paid to the American and Canadian Savings schemes, whereas the treatment of English and German insurance is comparatively slight. Partly this may be due to the already considerable literature dealing with these last, but mainly to the

author's doubts of the suitability of insurance for treating unemployment and his preference for the Employee Savings method. He specially stresses that this maintains the individual's responsibility by basing assistance on his individual savings. "The return receivable by any individual is always the precise equivalent of the total contributions, plus interest and after the deduction of expenses. . . . Each employee in such a fund possesses inalienable rights with respect to the contributions made by him or on his behalf."

In rejecting Insurance, the author relies chiefly on the difficulty of making reliable actuarial calculations even over periods of years, and in doing so seems to overstress the analogy with other types of insurance. He overlooks, too, the fact, emphasised particularly by Sir William Beveridge, that the fluctuating and uncertain incidence of unemployment makes collective rather than individual treatment essential to average out the good and the bad. Here the British distinction between insurable and uninsurable unemployment appears a far more effective method of meeting the difficulty. Indeed, British insurance has less to learn from these American projects in respect of general principles than in certain subsidiary matters. Thus, the longer waiting periods might well, as Professor Cannan has suggested, be considered with a view to conserving more of the available funds for long-period unemployment; and schemes for what is in effect a "dismissal wage," in compensation for displacement by technological improvement, may be compared with similar suggestions which were made by the late Lord Melchett.

The closing chapters work out the author's proposals for assisted savings. In theory, he seems greatly to over-emphasise the workmen's responsibility for unemployment, and correspondingly understresses that of employers, notably in respect of casual labour, and of the community as a whole, since unemployment is in part at least created by fluctuation in consumers' demand. In practice, he divides responsibility more equally. What we call insurable unemployment would be met jointly by employer and employee and uninsurable by the employee and the State, with Relief Funds in reserve for those not covered, or ceasing to be covered, by these means. Finally, he would prefer the workmen to bear half the cost, but is prepared to accept payment of an equal third share by each of the three parties.

N. B. DEARLE

The Technique of Social Investigation. By C. LUTHER FRY. (New York and London: Harper and Brothers. 1934. Pp. xii + 315. $2.50 net.)

MR. LUTHER FRY keeps closely to the title of his book, concentrating upon the machinery of social investigation, and provides much useful information for the social research worker. He treats the subject in order throughout from the preliminary planning to the final writing of the report and application of the findings. A last chapter of a more general character deals with the scope of Social Research. One advantage of his method is that his book can readily be used for general study of research technique, or for reference regarding particular branches of the subject.

The treatment goes into considerable detail. At times, perhaps, elementary matters are treated a little fully, whilst in other cases, as with the reference to the coefficient of correlation in the chapter on Quantitative Analysis, the treatment seems to assume more technical knowledge than many research workers, beginners especially, are likely to possess. But mostly the presentation is clear and helpful.

The book is based largely on American practice, but also refers to research work in other countries. There is, for instance, an interesting short account of the Booth Survey. Specially valuable features are the many references to actual investigations, illustrating practically the points with which the author is dealing, and his very considerable bibliography of the subject.

Possibly Mr. Fry might have ranged rather more widely and included, for instance, more information on British Research. Thus a brief description of the methods described in the introduction to *Industrial Democracy* would have been well worth inclusion, and what is there called "watching in motion," that is the observation of social institutions in their day-to-day operations, seems to provide a technique more fruitful than the more formal type of experiment, which, as the author rightly emphasises, is difficult to apply in the social sciences.

Mr. Fry's work will probably be most useful for the planning of the large-scale type of research, combining statistical and field work; and individual research workers, beginners especially, should bear its prime purpose in mind. But there is much which is of general application. Besides points mentioned above, Mr. Fry emphasises various pitfalls which may arise during an investigation, as, for instance, in respect of the use of the

" working hypothesis," as being at once necessary and liable to cause bias; and the advice and guidance given upon a variety of subjects should prove of assistance to more than one type of investigator.

N. B. DEARLE

The Consequences of the War to Great Britain. By FRANCIS W. HIRST. (London: Humphrey Milford; Oxford University Press. 1934. Pp. xx + 311. 10*s*.)

THIS is the concluding volume of the British Series in the " Economic and Social History of the World War," published by the Carnegie Endowment for International Peace. It is in two parts, the first covering political, social, and moral consequences and the second financial and economic consequences, the former occupying rather less than one-half of the book. In the first part is embodied an historical review which will certainly arouse much opposition but is perhaps as impartial as could reasonably be expected from so strong a partisan as Mr. Hirst. We can agree, however, that the War destroyed the character of the old political parties. " Politics became less political. Financial, economic, and social questions forced themselves to the front." The apparent potency of State action during the War and the distress which followed contributed to the growth of socialism, while the horrors and stupidity of war and the interference with personal liberty have created a powerful sentiment in favour of world peace. Social and moral effects are difficult to value, but Mr. Hirst has collected a number of illustrative opinions varying from one, that " the younger generation are much more independent, and take much more their own line, without reference to the older generation," to this (which is Mr. Hirst's own), that " the post-war generation of young men . . . are on the whole less industrious and enterprising, less public-spirited, and less interested in politics." From the latter view one may register dissent.

The financial consequences of the War are approached through the Budgets of 1914 to 1933, to which five chapters are devoted. Mr. Hirst has to a considerable extent confessedly taken his material from *British War Budgets* by himself and Mr. J. E. Allen and *British Budgets* by Sir Bernard Mallet and Mr. C. O. George. Two chapters follow on " the growth of taxation and expenditure " and " the war debt of Great Britain." His criticism is now familiar; insufficient taxation in the early years of the War and " an orgy of extravagance " throughout. Extravagance, as we well remember, characterised individuals as well as govern-

ments and patriotism was forgotten in the intoxication of rising prices. It is, for instance, well known that manufacturers squandered profits or disbursed them in needlessly high wages rather than pay them over as Excess Profits Duty. "In view of Lord Kitchener's warning at the outset that the War might last as long as three years, the Ministry had no excuse for not enforcing economy by the simplest of all methods, *i.e.* by taxation." But Mr. Hirst keeps his severest censure for "the almost criminal extravagance of the Coalition Government in 1919 and 1920." Part of the blame is fixed on the Civil servants; notwithstanding the slump which began in 1920 "the bureaucrats, strongly entrenched in Whitehall, were difficult to move." Mr. Hirst seems here to forget what he very well knows, and what every Civil servant finds out, that the business of the Civil servant is to obey orders and not to tax or legislate. Of all the Chancellors of the Exchequer with whom he deals Mr. Churchill comes off worst, and Mr. McKenna and Lord Snowden are treated most gently. Mr. Hirst thinks a "capital levy might well have been imposed on the war fortunes" of 1919–20, but his continual insistence is on economy, sometimes without much regard to the advantages of wise expenditure. The discussion on British war debts again contains little that is new, but the comment on the settlement of the debt to America in 1923 is worth quoting: "It was a most unfortunate transaction and it is now obvious that Mr. Baldwin was in much too great a hurry. A general arrangement should have been made with the Allies, or a most favoured-nation clause should have been inserted in the British Debt Treaty. In any case there should have been an arrangement for payment in goods untaxed by the tariff, or, failing that, the gold payments should have been checked by an index-number." Memory of the contemporaneous comment in American and other financial journals recalls that that Treaty, now maligned, did much to restore British credit, and, in any case, Mr. Hirst's alternatives were impossible of realisation then as now.

It is unfortunate for Mr. Hirst that so much of his history, and not least his chapters on trade and unemployment, has been discussed in scores of books during the last ten years that there is little new to be said. One may note, however, his censure of the Government of the day for conceding to India the right to impose tariffs on British goods (attributing it to the influence of the Bombay and Bengal manufacturers), though its refusal, with the growing spirit of Indian nationalism, might have brought worse evils. Again, the foolish expenditure of many working-class

persons during the War is set forth, but the present reviewer recalls the improvement in the health and clothing of the children of South-east London, whose parents were for the first time earning decent wages, more vividly than the fur coats and pianos in working-class households.

As has been already said, Mr. Hirst cannot expect to avoid contradiction, or at least controversy, but his book is a useful compendium of facts about the events of the last twenty years.

HENRY W. MACROSTY

The Twilight of Parenthood. By ENID CHARLES, M.A., Ph.D. (Watts & Co. Pp. 223. 7*s.* 6*d.*)

DURING the years immediately after the war there was a lively interest in population problems. In retrospect it is clear that the discussion was not fruitless; some permanent gain was made. Our ideas about the economic and sociological implications of the population question were clarified; research into the related physiological problems was stimulated, and it became possible to discuss birth control otherwise than in specialist publications. Then interest began to wane. This is a pity, because nothing can be more certain than that the changes, now taking place in the population situation in the Western world, will have a profound influence upon every aspect of the society of the future and its problems. But there are signs that population is again going to attract attention, and the publication of this book is one of them.

As the title and other indications show, Dr. Charles has addressed her book to the general public. It covers a great deal of ground; it is packed with facts, and the argument is often very condensed. Her qualifications over the whole field are high; she is thoroughly acquainted both with the statistical and the biological data. But it so happens that she holds views which are not very widely accepted, and a fuller exposition of her reasons for them would have been welcome. The general reader may find himself in some difficulty, since the facts are unfamiliar and the whole treatment so condensed. There is also a certain danger that he may take as proven some of her conclusions, which, though always deserving close attention on account of her qualifications to be heard, are nevertheless very questionable.

The first chapter is concerned with the possibility of the increased production of food opened up by science. It is extraordinary how little these facts are appreciated; discussion about

the population carrying capacity of the world is conducted as though our powers remained what they were fifty years ago. To stress this point is to render good service. The second chapter summarises the simple and beautiful methods, recently elaborated by Kuczynski, for assessing the position of a population in relation to its reproduction rate. These methods have stood the test of criticism and should be widely known. Then follows a summary of the results of applying these methods, and the remarkable position of the Western world is exposed; some countries, including our own, are 25 per cent. below replacement rate. Very properly there comes next an examination of differential fertility, since the most hopeful method of gaining further insight into the fall of fertility is undoubtedly to discover where and for what reasons within any community it has fallen most. Dr. Charles draws the important conclusion that a study of differential fertility leads us to suppose that fertility will continue to fall for some time to come. For this view there is ample justification. Differential fertility also raises qualitative problems, and Dr. Charles follows up this trail for a while. But eugenic problems are hardly suitable for so summary a treatment, and in any case are not part of the main theme. The fact seems to be that Dr. Charles cannot avoid having a dig at the eugenists, whom she regards as in general opposed to her social and political views. But it might be held that she tends to concentrate attention as exclusively on evidence pointing in one direction as they do on evidence pointing in the other.

Returning to the main theme she discusses in two chapters, which are the most interesting and at the same time the most debatable in the book, the more immediate causes of the decline of fertility and then the more remote or sociological causes. The latter she finds deep in the conditions which of necessity characterise an "acquisitive society." The sociological discussion is full of novel and acute observations; probably few will agree with all her views, but the treatment is far above the ordinary level of discussion of these matters. The chapter devoted to the immediate causes of the decline is more important since, until we are fairly confident as to what they are, any discussion of the sociological problem is necessarily rather in the air. The opinion is widely held that birth control is the explanation or at least by far the most decisive factor. Dr. Charles raises several difficulties in the way of this view, and the piling up of these difficulties gives the impression that she would assign a comparatively unimportant place to contraception. On the other hand, there

are passages which suggest that, when all the factors are taken into account, birth control will be found to be the most important of them. Thus we are left in the dark about her final conclusions.

The matter is so important that the points which she stresses deserve mention. She says that " four features of the decline in fertility of civilised communities . . . have been emphasised by those who regard the spread of contraceptive knowledge as the principal explanation of it." She names differential fertility, the high Catholic birth-rate, the high fertility of rural populations, while the fourth is connected with economic conditions. There are, of course, others, and of the most important of them Dr. Charles is not unaware. She says in another connection that " it is beyond dispute that the fall in European fertility was accompanied by a greatly increased dissemination of contraceptive information and by a more widespread and rigorous use of all available methods." As to class differential fertility, her difficulty in accepting it as evidence is that " birth control propaganda . . . has been closely associated with radical and socialist propaganda among the skilled workers." But propaganda in favour of all kinds of things, education for instance, was conducted by middle-class enthusiasts among the working class, and we do not infer that the working class in consequence became more advanced in these directions on that account. To the argument from high Catholic fertility she raises several objections. She points to the decline of the birth-rate in Ireland. But in fact fertility has remained high in Ireland; the decline of the birth-rate is due to few and late marriages. Irish data are, in fact, a point on the other side. She says that States in the U.S.A. with the highest fertility have few or no Catholics, and that those with many Catholics have only a moderate fertility. But in that country there are huge differences between the fertility of town and country and of foreign and native born, and the above facts can be explained as reflections of these differences which override the effects due to different religious practices. Her difficulty about the low Jewish birth-rate seems to be due to a misapprehension of Jewish teaching. She says that " Jewish authorities agree in condemning unreservedly all contraceptive methods." This does not at all accord with the very authoritative summary of Jewish teaching given by Dr. Lauterbach.

In general the difficulties in the way of accepting the ordinary view are not very impressive. What alternative explanations are there? Dr. Charles mentions three: frequency of intercourse,

washing and social promotion. It is true that there is reason to believe that, as the frequency of intercourse diminishes, so the chance of conception declines. But it remains to prove that the frequency of intercourse has declined. It has been shown that soap in very dilute dilutions is a powerful spermacide. But it remains to prove that washing as now practised enables soap to exercise its spermacidal properties. As to social promotion, the argument is that, since members of small families can get better education and can afford to wait for jobs, the congenitally sterile are favoured, rise in the social scale and so bring about a concentration of infertility in the upper strata. A somewhat surprising argument, it may be observed in passing, in the mouth of anyone who is otherwise so strongly opposed to the view that under present conditions genetic differences arise between members of the social classes. But what do we know for certain about the social promotion of members of smaller families and about the inheritance of human fertility? And how far is size of family correlated with fertility? The alternative explanations do not seem to carry us very far. On the other hand, our knowledge of the physiology of reproduction is so rudimentary that there is full justification for stressing the possibility that there may be unrecognised factors at work which reduce fertility. The point is that the presence of such factors has not been definitely established. It is not very easy to understand why Dr. Charles should be so anxious to belittle the importance of contraception. She says that the failure of "acquisitive society" to perpetuate itself is its "ultimate condemnation." But the more that the failure is due to accidental factors and the less it is due to conscious striving to prevent conception, the weaker becomes the case for attributing any blame. If our society came to an end owing to the spread of the use of soap and the substitution of the other pleasures for those of sexual intercourse, its end would be in the nature of an accident; blame would not be in the picture and its fate would not be altogether ignoble.

That this review has been mostly concerned with debatable matters should not obscure the fact that this is an able and stimulating book. It is not a dull rehash of the problem, and it is not a mere work of popularisation. It deserves the close attention of all who are interested in population.

A. M. CARR-SAUNDERS

The University of Liverpool.

The House of Adam Smith. By ELI GINZBERG. (New York: Columbia University Press. 1934. 8vo. Pp. xii + 270.)

MR. GINZBERG seems to be a young writer of considerable promise. Unfortunately, before reading the *Wealth of Nations* he seems to have imbibed the idea that it is (in the words of the dust-jacket of his book) "the Bible of modern capitalism," which in his vocabulary means the exploitation of wage-earners by profit-makers. Forgetful of the proverb, "The devil can quote Scripture," he was then surprised to find that the book, in fact, contains a very unflattering picture of "merchants and master manufacturers," and a very favourable one of wage-earners, especially country labourers. Flushed with excitement, he hastened to communicate his discovery to the world in the book now before us without first inquiring whether what was new to him was not already well known. If the "Conclusion of the Chapter" at the end of Book I of the *Wealth of Nations* and other familiar passages in that work were not sufficient, any doubt about Smith's sympathies must have been set at rest by the report of his Glasgow *Lectures*, which has been available ever since 1896, though booksellers often wrongly allege it is out of print. It would be too ridiculous to try to make a typical anti-socialist out of the man who thought it might be justly said that "the people who clothe the whole world are in rags themselves" in consequence of their pernicious habit of putting boys to work too soon, and who told his students that the merchant was better paid than his clerks, though his labour was less, and that his clerks had equal advantages over the artisan and the artisan over the labourer, so that "he who as it were bears the burden of society has the fewest advantages."

Part I of Mr. Ginzberg's book is regarded by him as an attempt "to reconstruct and interpret the *Wealth of Nations*," but it is singularly unsuccessful, because it jumbles the opinions of other persons along with Adam Smith's. Instead, for example, of Smith's extravagant panegyric on the education given to girls in his time, we are startled to find a violent attack on it. There is nothing in the text to warn the reader that he has been switched off on to the opinion of an anonymous pamphleteer, and the notes are not likely to help, as they are not at the foot of the page but huddled away at the end of the volume.

Part II, which according to plan should have shown how Smith's work was turned to base purposes by reactionaries, is very discursive, and at last loses sight of the question altogether

in long examinations of the opinions of President Hoover and Pope Pius XI, neither of whom are alleged to have claimed to be supporters of Adam Smith or even to have referred to him.

Mr. Ginzberg's chapter headings are pyrotechnical rather than informative, but much will be forgiven to a writer who possesses a liveliness of style which is sadly wanting in the bulk of contemporary economic literature.

EDWIN CANNAN

The State and Economic Life: Addresses and Reports given at the Sixth International Studies Conference. (Paris: The International Institute of Intellectual Co-operation; London: Allen and Unwin. 1934. Pp. viii + 422. 15*s.*)

The New Internationalism. By CLARK FOREMAN. (New York: W. W. Norton. 1934. Pp. x + 154. $1.75.)

INCREASING intervention by the State in industry and trade is a world-wide phenomenon; and it is not surprising that a change of economic policy so significant should have led to the holding of conferences and the writing of books to elucidate the principles and extent of the movement. The second of the International Studies Conferences to be devoted to the subject of "The State and Economic Life" was held in London in the summer of 1933. It was organised by the International Institute of Intellectual Co-operation in collaboration with the British Co-ordinating Committee for International Studies; and this volume contains reports and memoranda, and verbatim notes of the discussions at the Conference.

The subjects considered fall into two main groups: (1) International Trade and Finance, *i.e.* tariffs and the regulation of international capital movements; and (2) State Intervention in Private Economic Enterprise, which includes a variety of subjects, amongst them State planning. The excerpts from the preliminary memoranda, and a few of the speeches, contain most useful information; but it seems doubtful whether a conference of this character is worth the time and money spent on it. If, instead of ranging over the whole vast field of the relations of the State to economic life, the conference had concentrated on one particular subject or problem, some definite and useful conclusions might have been agreed.

Internationalism, according to Dr. Foreman, "is a system of political, economic and cultural co-operation by the nations of the world." The Mercantile system gave way before the rise of "capitalist internationalism" based on *laissez-faire*, the ideal of

which was universal free trade. Socialist internationalism was an opposition theory. It began with Karl Marx, and was developed into a theory of the solidarity of the interests of all workers, regardless of their dwelling-place or nationality. But the elimination of national units which both of these systems envisaged shows no sign of realisation. Nationalism has been growing, quite as much in its economic as in its political aspects. During the past ten years the tendency has been towards a planned national economy and increased participation of the State in the economic affairs of the nation in nearly all countries; and in international relations this has resulted in State regulation amounting, in many countries besides Russia, practically to State trading. When they develop national consciousness the people of a country want a balanced economy: they aim at self-sufficiency in war and prosperity in peace. "The world has paid a heavy price for the attempts to expand commerce without regard to the effect on the human populations. The new internationalism will have to make allowance for national aspirations, but also there will be the same need as before of large areas for commerce." Those countries which achieve national development and a trade area sufficiently large to make them self-sufficient in war and prosperous in peace will be the leaders in the new international system. This thesis is worked out with a wealth of examples from recent world history.

H. S. JEVONS

The World Trend Toward Nationalism. Edited by ERNEST M. PATTERSON. (The American Academy of Political and Social Science: Philadelphia, 1934. Pp. x + 222. $2.50.)

The Economics of Rearmament. By PAUL EINZIG. (London: Kegan Paul. 1934. Pp. ix + 179. 6*s*.)

THE first is a number of the Annals of the American Academy of Political and Social Science (for July 1934), which contains papers read at the thirty-eighth annual meeting of the Academy, with discussions, and a few articles on the general topic of nationalism, followed by a series of papers submitted by the Academy of World Economics at Washington. It forms a volume bound in cloth and specially indexed. The 24 papers and articles are grouped under such headings as: American Foreign Loans and the Future, The United States and Nationalism, Can Wars be Avoided? There are several noteworthy papers, and some of permanent value. For instance, Albert Guérard writes on "Herder's Spiritual Heritage"—that is, nationalism, romanticism and democracy as they developed after the French Revolution,

and Sir George Paish on "Is Nationalism opposed to Internationalism?" Other well-known authors are: W. S. Culbertson and Henry Chalmers on trade barriers, Ramon Gorski on the Polish Corridor (with suggestions for a solution), and Clarence Martin on "The U.S. and the World Court." The book is full of useful matter on current international problems in Europe, America and the Far East.

The Economics of Rearmament is a striking little book: a sincere and original study of a difficult question. Although for sentimental reasons the author would have preferred, as he says, to present as strong a case as possible for disarmament, he found himself compelled to realise that, from the economic point of view, there is no clear case for either disarmament or rearmament. Those who claim that rearmament will cause financial and economic collapse are about as wrong as those who urge that it would be a general benefit because the expenditure would create employment. The author concludes that in a competitive regime dominated by *laissez-faire* mankind could not immediately benefit economically by a reduction of expenditure on armaments. Any expenditure on production, even of useless objects, which does not replace existing production is advantageous in that it creates employment; though it is doubly so if the product is permanently useful either as an instrument or public work. Only by resort to economic planning can a nation reap full advantage from disarmament. It is the existing system of the distribution of wealth which renders the foregoing conclusions inevitable. In a completely planned economy, such as Soviet Russia is endeavouring to establish, all armament expenditure would be a dead loss, because the manufacture of arms would always replace other activities. Such is the main argument of this thoughtful and readable book, which also has some interesting observations about the unbalancing of budgets.

H. S. JEVONS

The Italian Corporative State. By FAUSTO PITIGLIANI. (London: P. S. King. 1933. Pp. xxv + 293. 15*s.*)

Fascism and Social Revolution. By R. PALME DUTT. (London: Martin Lawrence, Ltd. 1934. Pp. xi + 296. 5*s.*)

The Roots of Violence, being the Mertens Lecture, 1934. By S. K. RATCLIFFE. (London: The Hogarth Press. 1934. Pp. 60. 1*s.*)

THESE three books have little in common except that they treat of Fascism from different points of view. Signor Pitigliani

gives us a useful account of the constitutional changes which have been made in Italy under the Fascist regime. He begins with an historical description of the growth of various types of occupational associations, and explains why it is to the advantage of the State not merely to grant legal status to trade unions and employers' associations, but to charge them with specific duties and obligations to the body politic in return for legal protection. The character of collective contracts and the working of labour courts in Italy are examined in detail, and two chapters are devoted to a full exposition of the corporative organisation of the Italian State.

The second part of the book describes the present occupational associations, reviewing their history, constitution and working. These cover the whole field of agriculture, industry, transport and finance, for both employers and employed, and the professions. Some English readers may be puzzled by the fact that the translator has frequently used the terms "syndicate" and "syndicalism" for "trade union" and "trade unionism," the term "revolutionary syndicalism" being used for the doctrine commonly denoted in England by the latter word only. The book is a detailed exposition and justification of the Italian corporative state, fully documented, but with no independent criticism. There is a long mathematical appendix on the economic basis of wage arbitration, based on Marshall, Edgeworth and Pareto; but there is no reference to Pigou.

Mr. Palme Dutt has written a most elaborate attack on Fascism, vitiated by his inability to see any good in it. There is a great deal of truth in many of his generalisations; and his numerous quotations, and his discussions of them, are full of interest. A careful unprejudiced student might draw much useful material for his own studies from the book; but as it stands it is of small importance on account of the obvious bias of the author.

Mr. Ratcliffe's lecture is a nicely phrased indictment of the coercive State, whether it be Italy or Germany, and an explanation of this political phenomenon based upon his wide reading. Fascism, it seems, is neither so new nor so un-English as we are apt to assume. Thomas Carlyle, who is revered more in Germany than in England, writing his *Latter-Day Pamphlets* in 1850, outlined the whole system of Fascism: a prime minister who would be actual ruler and demand a wise obedience to a wise command, with a regimenting of "pauper banditti" into soldiers of industry. Without telling us what to do, Mr. Ratcliffe has given us a very pleasant and profitable evening's reading. H. S. JEVONS

Railways and Roads in Pioneer Development Overseas. By J. EDWIN HOLMSTROM. (London: P. S. King and Son, Ltd. 1934. Pp. 304. 15*s.*)

UNTIL recent years, railways were the only practicable means of providing the essential transport services required for the opening up of hitherto undeveloped regions, but now an alternative method in the form of motor transport is available. All over the world, motor transport has developed to a remarkable extent owing largely to the fact that a motor service can be provided with a small amount of capital within the reach even of small native business men in Africa and Asia. Dr. Holmstrom points out that while nowadays motor transport grows up almost naturally to meet the demand, railways require to be deliberately planned. It is indeed a remarkable fact that motor transport has already become almost an integral part of somewhat primitive native economies in many areas. As Dr. Holmstrom remarks, "When one comes across the palm-thatched shelter between his grove of cocoanuts and his patch of rice, under which the prosperous Malay keeps his ramshackle old car wherewith to drive barefooted into market with his produce, one is struck with the intimate way that motor transport weaves itself into the accepted social fabric of the age as much in the East as in the West."

In undeveloped countries, the economic possibilities of motor transport are now so considerable that it has become an important problem to determine the correct relative sphere of rail and road (or roadless) transport in such regions. Motor transport is very flexible; the railway is rigid. Motor transport requires only a small amount of capital and its roadway can be gradually improved as traffic warrants, beginning if necessary as a simple track across country; a railway from the outset requires the expenditure of a vast amount of capital which once sunk in providing the permanent way and works is practically useless for any other purpose.

Dr. Holmstrom in this book has made an important contribution to the solution of the problem, basing his conclusions on a large mass of data relating to the costs of both road and rail transport in various African, Asiatic and other countries. Special interest attaches to his conclusions, since he is a practical engineer with experience of railway construction in Malay and China. The book provides a detailed and painstaking survey based mainly on the published reports of the operators concerned. The matter is treated in an original way and the author, with the aid of simple

mathematical formulæ and hyperbolic costing paper, elaborates a technique for estimating from local conditions the proper relative scope of railway and road transport in countries as yet economically undeveloped.

The book is divided into four parts In Part I the nature of different forms of land transport is analysed, and it is argued that the solution of the problem requires the distinguishing, measurement and correlation of consumer's costs, carrier's costs and virtual costs; the last named being a statistical estimate of the total wealth absorbed in providing transportation and in conferring any indirect benefits which may result. In Parts II and III, which deal respectively with rail and road transport in a number of undeveloped countries, the author develops a technique for deriving the kind of cost data required for his purpose from the published accounts and reports of the various undertakings. In Part IV the necessary adjustments of the crude data are made and various comparisons and conclusions are drawn, taking into account indirect benefits as well as measurable costs.

The most interesting contribution made by Dr. Holmstrom is the elaboration of a formula for obtaining the virtual cost per ton-mile of a " typical " colonial railway expressed in terms of the traffic density in equivalent ton-miles per route-mile per annum. The cost of providing and using the " typical railway " he estimates in round figures at £700 per mile per annum plus ½*d.* per ton carried. The virtual cost per ton-mile on a road is estimated at 9·50*d.* at all densities where comparison arises with railways, and from this he calculates that the critical density at which the virtual cost on a typical railway drops below the virtual cost on a road is 16,900 equivalent ton-miles per route-mile per annum. The figure thus obtained has to be modified by taking into account other factors than mere transport, such as terminal and handling charges or indirect benefits. Such modification, he points out, can only be effected by personal judgment locally informed, but it is in the public interest desirable that all transportation should be performed by whatever means incur the lowest virtual costs thus weighted.

Dr. Holmstrom is to be congratulated for his timely and important contribution to the study of problems of road and rail transport and his book should be read by all interested in these questions.

K. G. Fenelon

College of Technology,
Manchester.

Land Problems of India. By RADHAKAMAL MUKERJEE, Professor of Economics and Sociology, Lucknow University. (London: Longmans. 1933. Pp. x + 369.)

LAND tenure is probably more complicated in India than in any country in the world. Customs governing the occupation of land vary from district to district; and each province has its own considerable body of land legislation differing, in some cases fundamentally, from other provinces. Primitive tribal customs, literally thousands of years old, have survived in some parts. Each successive wave of conquerors from the north-west introduced new customs in the parts where the invaders settled in numbers. Four hundred years ago came the organised land system of the Mughal Empire, which the British inherited. This became overlaid with laws which in the nineteenth century embodied the crude application of English ideas, but more recently have been based on the ascertained needs of the situation. The author gives a good idea of this complexity, and indicates the probable origins of many indigenous systems of tenure. The present book is not primarily a description of Indian land tenures, for that task was accomplished by Baden Powell in his standard work of three volumes, whilst the British law has been set forth in legal works.

Professor Mukerjee is concerned with the effects of the laws and customs of the land tenure upon the efficiency of agriculture and the welfare of the peasants. The existing systems of tenancy, and the abuses which have grown up under them, are described in order to explain the reasons for the reforms which have been attempted and those which the author advocates. These are of great range and complexity; but everyone who studies the rural economy of India agrees that sweeping reforms are necessary to improve the economic position of the peasant, though opinions differ as to how they should be carried out.

The most serious evils, which are correctly described by the author, are: the growth of landlordism and rack-renting, even in the provinces where the law recognises only peasant proprietorship; sub-infeudation, the land being let and sublet to five or six successive subtenants, only the last being the actual cultivator; the extreme subdivision of holdings, so that a family has to live on less than an acre of rice land, and individual fields are often no larger than a tennis-court; the scattered nature of the usual holding with fields in ten to twenty places; the levying of premia and "fines" by landlords where rents are fixed by law; the pressure of land revenue on the small cultivator in some parts;

and the usurious rates of interest charged by money-lenders, and failure of the land alienation acts wholly to protect cultivators from loss of their land.

The author considers at some length the problem of enlarging the multitude of uneconomic holdings, and of consolidating the holdings which consist almost universally of scattered fields. He is in favour of compulsory pooling and re-division of the land in compact holdings, and re-adjustment of village roads and paths, and easements, such as irrigation channels. There have been various measures to protect tenants by conferring occupancy rights and automatically acquired tenancies for life. Yet there is a host of tenants-at-will, and of protected tenants, having holdings too small to maintain a family. These classes might be provided for to a large extent, the author suggests, by Government purchase of the large *zamindaris*, or landlords' estates, and sale to the peasants by gradual instalments on the Irish plan, after laying out the land to the maximum advantage. The permanent settlement is reviewed, and its baneful results are indicated. The proportion which land revenue bears to rent and to the cultivator's surplus is examined; but, since most of his proposals are sound, it is surprising to find the author proposing that the land revenue should be reduced for cultivators with very small holdings on the principle of ability to pay. This confuses a tax which takes a share of the economic rent with an income tax. Any such basis of assessment would be likely to prove extremely difficult from the administrative point of view.

In several places the author's inferences from the experience of other countries seem to need reconsideration; but the book forms a useful and suggestive review of the agrarian problems of India and of possible methods of alleviation. Numerous vernacular words are used for different tenures, tenure-holders and customs without any translation or explanation, the book having been written for those already conversant with the main features of Indian rural economy.

H. S. JEVONS

NOTES AND MEMORANDA

The Economic Aspects of the Proposed Indian Constitution

§ 1. The Report of the Joint Committee on Indian Constitutional Reform may now be regarded as the final outcome of the political deliberations which have for nearly a decade busily engaged the statesmen of two countries and which have produced one Statutory Commission, three Round Table Conferences and several Committees and sub-Committees. In view of the strength of His Majesty's Government in Parliament, the Constitution, as outlined in the White Paper (Cmd. 4268) and as retouched in the Joint Report, may be said to be a *fait accompli*. At the moment both in India and Britain attention has centred round the Safeguards, commercial and other, which in one country are looked upon as unnecessary fetters on freedom and in the other as a "necessary complement to any form of responsible government" and transfer of power. It is for the politicians to ferret out these questions of transfer of power; the task of the economist is to consider dispassionately whether the new Scheme is capable of bringing about any real advance in the economic well-being of the masses, of raising their standards of life and culture and of providing them with the material and moral equipment necessary to maintain those standards.

Applying that crucial test we have to admit that although the Report provides a very successful solution of the problem of constitution-making in the shape of a concrete Federal scheme, and although it very ably brings into focus the work of previous Committees and sub-Committees, it fails to realise as fully the economic needs of the country. It may at once be said that the economic aspects of the Report are less satisfactory than its political aspects and that India's economic freedom, whether in the financial, fiscal, industrial or monetary sphere, is hedged in with limitations, which may indeed have been necessitated by reckless intimidation on the one side, but which are equally the outcome of distrust and niggardliness on the other. We are assured by the Joint Committee that the Safeguards they contemplate have "nothing in common with those paper declarations which have sometimes been inserted in constitutional documents,"

but constitute a substantial retention of power. In the circumstances, it is only to be hoped that this all-powerful "Special Responsibility" will be brought into play as sparingly as possible and on especial occasions and that such occasions will be few. So far as the commercial safeguards and their offshoot, the recent Trade Agreement, are concerned, one cannot help fearing that the influence of one declining industry is now blocking the way of a real commercial partnership between the two countries, which, if it were aimed at, should undoubtedly confer benefits on both the modern type of industry in Britain and on the agriculture and the less advanced type of industries in India. The new commercial philosophy, which all the world over has converted fiscal policy from a matter of principle into a market-day haggle, has now unfortunately taken hold of India as well. From a régime of discriminating protection, which was long ago officially affirmed to be the ideal system for India in view of her economic potentialities, India has been gradually led into a policy of indiscriminate preference and of reciprocity in which there is no full freedom to contract.

§ 2. It is, however, in the handling of the twin instruments of public finance and monetary policy that a true criterion may be obtained of the success or failure of the Joint Committee's proposals. To take the problem of Federal finance [1] first, this has been one of the most intricate affairs in the Scheme. The more important issues involved are: (1) distribution of powers and resources between the Federal Government and the Units; (2) extra expenditure caused by the Constitution *per se* and the subventions to be granted to Sind and Orissa, on their being constituted as separate Provinces, and to the backward Provinces, together with the financial effects of the separation of Burma; and (3) the financial relations between the States and the Federal Government and the reconciliation of the treaty rights of the States with the economic unity of the Federation. These questions will be briefly touched upon here.

In regard to distribution of powers and resources, Sir W. Layton wrote (Simon Report, vol. ii, p. 210): "Whereas nearly all the functions, which will require large expenditure in the future, fall in the Provincial sphere, the revenues assigned to them show a

[1] The subject-matter for this is scattered in various documents. Cf. Sir Walter Layton's *Financial Memorandum* in the *Report of the Simon Commission*, 1930; *Reports of the Federal Finance (Percy) Committee* and the *Indian States Enquiry (Davidson) Committee*, 1932–33; *Reports of the Facts-finding Committees of the Government of India*, 1930; *Report of the Sind Financial Enquiry Committee*; and the *Howard-Nixon Memorandum* on Burma, 1931.

quite inadequate increase, while the Central Government, whose expenditure should be stationary or falling, has assigned to it the only revenues which in recent years have shown expansion." If this is true of the present system, it will be still more true of the Scheme now proposed. Almost all the nation-building departments have been assigned (and quite rightly too) to the Units, while the sources of revenue assigned to them are both unsubstantial as well as inelastic. This is bound to result, as it has done in other Federations, in a perpetual scramble for Federal " doles " and in a strain being put on financial relations themselves. The Percy Committee had proposed that the whole of the super-tax and the taxes on personal income should be handed over to the Provinces, subject to temporary contributions to the Federal exchequer. The White Paper recommended that a certain percentage of the income tax (not less than 50 per cent., nor more than 75 per cent.) should be transferred to the Provinces, subject to a temporary arrangement in which part of this percentage should be retained by the Federal Government. The Joint Committee recognise the importance of leaving larger and more elastic resources with the Provinces (p. 161); but they make clear the inevitable consequences of the present system when they remark (p. 164) that " for some time to come the Centre is unlikely to be able to do much more than find the funds necessary for the deficit Provinces, and that an early distribution of any substantial part of the taxes on income is improbable." This inability apparently proceeds from the fact that nearly 60 per cent. of the Central revenues (Rs. 462 m.) is and will be absorbed in military expenditure and this must at all events be " safeguarded." Sir Walter Layton has investigated this question in his *Memorandum* (pp. 216–18) in the Simon Report. He comes to the conclusion that viewed from whatever angle and using whatever mode of comparison the " defence ratio " in the budget appears to be unjustifiably high. No effort has been made so far by anyone to refute that view; and yet this huge leviathan of military finance continues to dominate the budgetary position of a poor country. Expenditure on defence, along with some other fixed charges, covering about 80 per cent. of the Federal budget, is to be non-votable, and yet the Committee finds it possible to remark (p. 22) that " The existence of a large standing charge for Defence circumscribes but by no means destroys the financial responsibility of ministers."

The specific cost of establishment of the Federation is estimated at Rs. 15 m.; the creation of new Provinces such as Sind and

Orissa will entail subventions of about Rs. 9 m.; relief to deficit and backward Provinces like Assam and the N.W.F. Province will account for Rs. 20 m. or more; the transfer of the export duty on jute to the jute-producing Provinces will involve about Rs. 20 m.; and settlements with the States will cause a further burden of nearly Rs. 10 m. Leaving aside the financial effects of the separation of Burma, which, according to calculations made by the Standing Finance Committee of the Indian Legislative Assembly, would mean an annual loss to the Federal Government of Rs. 30 m., all these elements would involve a total expenditure of Rs. 70 m. to the Federal Government. Although the net cost of federation is not prohibitive, still this is too heavy a burden to saddle the Federal Government with. The Federal Minister of Finance will be in an unenviable position indeed with a 20 per cent. budget on the revenue side under his control and a growing burden of "doles" on the other. Both the Percy Committee and the Joint Committee have found a *deus ex machinâ* in a future economic recovery in India; and yet, it may be asked, what steps has the Government taken to bring this about in India? It is often pointed out, with some complacency, that India's credit stands high in the world's money markets, that India is one of the few happy lands where budgets are customarily balanced. But can it be said that this represents the true state of affairs in India? There are two ways of balancing budgets, and in a country where social services have never occupied any important place in the budget, it is always possible to satisfy all the canons of "sound finance" by drastic retrenchment. The real position becomes apparent when we inquire into the state of unemployment and indebtedness in India, which have both become problems of menacing dimensions entailing untold misery to the masses. The real solution of the financial problem may, perhaps, be found, therefore, in an expansionist monetary policy and not in any tinkering at the budget items.[1]

§ 3. The position of the Indian States as Units of Federation will be in many respects unique. These semi-autonomous, monarchical bodies, enjoying varying privileges and various degrees of internal sovereignty, based upon treaties and *sanads*, are rapidly becoming an anachronism in the midst of a growing movement for democratic self-government. At the moment the Princes are

[1] Another possible line would be to make the system of taxation as a whole less regressive than it is at present and tax the higher strata of incomes more progressively. There is reason to believe that with the advent of the corporate organisation in India there has appeared a tendency towards greater concentration of wealth, although essentially inequality is not yet a rampant evil.

sitting on the fence and would not like to commit themselves until " the picture is complete." But it is clear that they stand to gain all along the line in their bargain with British India. The Joint Committee have, in the main, endorsed the proposals of the Davidson Committee, which may be briefly recapitulated. The States at present enjoy by their treaty rights certain financial immunities and benefits; on the other hand, they make certain direct and indirect contributions to the Centre. Now the States are not a collective body, but comprise numerous and diverse political entities and, moreover, some of them make contributions which are greater in value than the privileges they enjoy, while others are in the opposite situation. In other words, some are " credit " States and others are " debit " States. The Davidson Committee rightly maintain that individual settlement will have to be made with each State on its entry into the Federation, and recommend as a matter of principle, lest the " debit " States should never enter at all, that the " debit " States should not have to pay anything to the Centre, while the " credit " States should receive annual payments equivalent to their " credits." This ingenious system would, however, involve a net expenditure of about Rs. 10 m. per annum to the Federal Government. Thus it will be seen the States will have it both ways. In spite of this, however, there is no suggestion on the part of the States of any surrender of privileges. The customs rights which some of them enjoy are already creating financial difficulties for the Government of India, and will undoubtedly constitute a serious deduction from the sovereignty of the Federal Government for which there is no parallel in any other Federation. Attempts were made in 1927, prior to the reimposition of the Viramgam Line, to buy up certain of these rights with liberal compensation, but such proposals were regarded by the States concerned as " an encroachment on sovereign rights." The Davidson Committee were convinced (*Report*, p. 129) that " no port-owning State is likely to surrender its customs rights even in return for full compensation." The Joint Committee have held out the threat of exclusion from Federation for such a recalcitrant State. Although this does not solve the basic difficulty it may be the only possible course left open.

§ 4. As regards monetary and banking policy, the Reserve Bank of India has already been constituted and is expected to begin its operations from July.[1] This was one of the conditions precedent

[1] For a description of the Reserve Bank Scheme see Professor Shirras's article in the ECONOMIC JOURNAL, June 1934.

to Federation, and it must be said to the credit of the Government that in the fulfilment of that condition one more engine for the economic unification of India has been created which must in the end prove a bond of strength to the country. The constitution of the Bank is, on the whole, satisfactory and workable. In fact, this appears to have little to do with the question of control. The main objectionable feature of the scheme is the strait-jacket of a predetermined monetary policy within which the Bank will have to confine itself. That the sterling standard conferred certain benefits upon India when the " monetary horizon " was foggy in 1931 may be conceded, but now conditions have sufficiently clarified to warrant a revision of policy, and in any case, even granting for argument's sake that exchange stability is a proper monetary ideal for India, the unnaturally high ratio of 1*s.* 6*d.*, at which the exchange has been kept pegged since 1927 and which has caused a disastrous price-fall to be superimposed upon the fall in Indian prices already caused by the Depression, undoubtedly needs reconsideration. That the ratio is unnatural can be easily proved by comparison of movements of wholesale prices in India with those in other Sterling-area countries since 1927. In the circumstances, the imposition of a preconceived policy upon the Reserve Bank and the attempt (cf. Joint Committee Report, p. 229) to perpetuate it by rendering amendment of the Act, in this respect, difficult—both without any precedent in the history of Central Banking—are to be deplored.

§ 5. Brief reference may here be made to two other important topics which are covered by the recommendations of the Report, viz. Labour and Railways. Labour reform is to be largely a field for concurrent legislation, so that the Federal Government should be in a position to co-ordinate, guide and encourage provincial effort, provided that the Federal Government could ratify International Conventions without consulting the Units, except in regard to Labour subjects falling within the latter's sphere. However, in view of the fact that Labour is not adequately represented in the Federal Legislature, while the vested interests of the Princes and capitalists will be in an overwhelming majority, progressive Labour legislation at the Centre seems difficult if not impossible. There is indeed more scope in the Units for this, but owing to industrial competition among them, and in so far as social measures would cost money, they must be reluctant to go far enough. These facts, coupled with the weakness of Trade Unionism and the illiteracy, poverty and indebtedness of the workmen, make the future of social legislation less hopeful than its past. As regards

the railways, the Joint Committee endorse the *Sketch Proposals* of the London Committee of 1933, whose main features are, the institution of an independent Statutory Authority for operating the railways vested in the Crown as well as for controlling some of the company-owned lines, " upon strict business principles and without being subject to political interference "; the presentation of the railway budget in the Legislature merely for debate and not for vote, except to the extent that a contribution from the general revenues is required; the fixation of maxima and minima for rates by the Authority, complaints being referred to an Advisory Committee appointed by the Federal Government. There is no suggestion in the Scheme, however, of a uniform system of management of railways, and although the general control over policy is vested in the Federal Government and Legislature, it is doubtful how far the actual administration of railways will conform to this.

B. P. ADARKAR

Hindu University, Benares.

OFFICIAL PAPERS

Reports of Investigations into the Industrial Conditions in Certain Depressed Areas. Cmd. 4728. (London: H.M. Stationery Office, 1934. Pp. 240. 3*s.* 6*d.*)

THE Reports of the four special investigators who were appointed in April of last year to examine the conditions in the four " special areas " will inevitably be read in close conjunction with the original articles in *The Times* which did so much to inspire their appointment, and with the Industrial Surveys which covered much of the same ground three years earlier. *The Times* articles attempted to distinguish between the problem of the areas which were suffering from the effects of depression, but which were likely as trade recovered to find a renewed demand for their products, and the problem of those areas which had become " derelict," whose means of livelihood had been exhausted or destroyed, so that no recovery of trade could restore their prosperity.

This useful logical distinction has proved in practice impossible of statistical application. All the investigators attempted to define the derelict regions in their area; all for a variety of reasons abandoned the attempt. Few places are dependent exclusively on a single industry, and Mr. Davidson, the investigator of Cumberland, has hesitated to pronounce towns as derelict where other industries

have provided some small measure of employment. Moreover, in a number of cases in Scotland and South Wales derelict villages have become dormitories from which workers travel daily to work in the newer mines or in other industries. In this case the extent of dereliction [1] depends more on the local demand for labour than on the physical facts of the exhaustion of minerals. The problem is further complicated where the abandonment of the minerals is due rather to economic than to physical reasons. The coal or other mineral remains, and with a sufficient rise of price might again be worked. There is a similar difficulty in the case of manufactures. One important source of dereliction is the movement of iron and steel manufacture from towns based on economics of the raw materials which existed in the middle of the last century to newer centres better placed to make use of the economics of to-day. The movements from the northern end of the Welsh valleys to the seacoast, and from the smaller Cumbrian centres to Millom and Workington are almost certainly of this kind. But this movement has been in part only a general migration of the industry; it has been in part also a concentration of a limited production in the most economical plants of large companies dominating a whole area, and it is by no means certain that with a substantial recovery of demand output will not again be required from the derelict towns. In some cases the plant has itself become so derelict that this is most improbable, but in many cases substantial uncertainty remains, and none but those in the confidence of Boards of Directors can know the extent of the probable dereliction.

In the original reports submitted to the Cabinet, and in particular in Sir Wyndham Portal's report on South Wales, much material was included which has no doubt enabled the Government to make a more accurate estimate than is possible from the limited information that it has been thought proper to publish. This uncertainty is, however, removed in some few cases, such as that of Jarrow, where "rationalising" organisations (in this case National Shipbuilding Securities Ltd.) have acquired a works for the purpose of preventing it being used for its original purpose, and have thus rendered the dependent town undeniably derelict. The uncertainty has greatly increased the practical difficulties of dealing with the problems of the derelict areas. The ordinary worker is seldom in a position to judge the prospects of future production at Dowlais or Ebbw Vale. There are never lacking

[1] This very necessary noun I have derived from the Report of Sir Arthur Rose.

the encouraging remarks of company chairmen to reinforce all the normal inclinations of the worker, more particularly if he is house-owner, to hang on in the hope of better times coming. And in some few cases he has proved unexpectedly right.

The only satisfactory use, then, of the term " derelict " is to imply that even in the event of the maximum probable recovery of industry certain given resources will remain redundant for the purpose for which they are at present organised. But the moment it is recognised that dereliction is more often an economic than a physical phenomenon the basis of the present inquiries becomes suspect. There is no physical test by which dereliction can be recognised, and individual investigators sent out to different areas may either exaggerate or under-estimate its extent. Sir Wyndham Portal, for example, has attempted to estimate the probable extent of superfluous labour in the South Wales coalfield by assuming that all existing mines were worked to their present full capacity. Such a method will, of course, indicate the irreducible minimum of superfluity, but if the purpose is to judge the probable local share in a national superfluity, it almost certainly under-estimates the figure or yields a result which is possible only with substantially increased unemployment elsewhere.

A single Commissioner dealing with all the areas concerned as a single problem will have a far easier statistical problem, and in some respects an easier practical problem, than that which faced the industrial investigators. He will know that to some given extent at least either the Tyne shipyards or the Clyde yards must be regarded as superfluous. A unified policy can attempt to deal with a problem whose total dimensions at least can be sufficiently accurately estimated, and can do its utmost to avoid the inevitable regional conflicts for survival. It is to be hoped, therefore, that the appointment of a single Commissioner will mean that the problem can be regarded as a whole, and that the separation of the Scottish area under a separate Commissioner will not imply a failure to reconcile the divergent interests of Tyne and Clyde.

These difficulties of defining and of recognising the extent of dereliction must not, however, be permitted to obscure its importance, both locally and nationally. It is sufficient in many cases that its existence be admitted, for the methods of treatment are largely independent of its scale. The problem of the physical exhaustion of natural resources is not, of course, a new one. So long as it was simply a physical problem, and the total demand was stable or increasing, it was solved as a rule by short-distance

migration to newer undertakings. Labour followed the coal southwards down the Welsh valleys or eastwards towards the Durham coast. Such movement needed little encouragement or organisation. In recent years the more distant migration from Wales and other parts to the developing Kent coal-field has required rather more assistance, but has differed in degree rather than in kind from the usual short-distance movements. It is the onset of economic dereliction, accompanied by an unusually heavy mortality of mines opened during the period of rapid expansion of the coal industry in the early and middle part of the last century, and finally abandoned owing to falling coal prices, that has created a new problem of adjustment.

Each of the investigators has been concerned to study three methods of dealing with the consequent difficulties. They have studied the possibilites of industrial revival, of the diminution, that is, of the degree of dereliction by better organisation and reductions of costs, or by slight adaptations of existing depressed industries. As regards the coal industry Captain Euan Wallace has emphasised the menace to pits still working of the flooding of pits that have been abandoned. Valuable coal has already been submerged and lost. He is himself convinced that only by common action can these Durham pits be effectively dewatered and one area be prevented from causing possible damage to another. Common action is, however, impossible without such reorganisation on the one hand as will make feasible a common policy, and without unification on the other hand of mining royalties so that the conflict of interest between royalty owners and lessee can be in some measure resolved. Sir Wyndham Portal also urges unified drainage of the South Wales mines and presses for further Trade Agreements, for the exploitation in South Wales of the hydrogenation process, and for the exploration of the possibility of gas fuel for road vehicles. But it is recognised that this method of dealing with the problem must be supplemented by one or other of two further methods, that of transferring men to other and more prosperous districts, or that of attracting new industry to the depressed areas.

The method of transfer, so long as trade was reasonably prosperous, was already proceeding apace. From Durham during the five years 1926–1931 some 129,000 persons, about 9 per cent. of the population, migrated to other areas in search of employment. But such migration is obviously a last resort. No one can fail to sympathise with the chairman of a parish council who told the investigator for Cumberland, "We are up against

transference. We do not want to see our community breaking up." The social problems of transference are reinforced by the economic problems. Local government services, provided out of rates, have no cushion of profits and no simple process of bankruptcy and reorganisation. The declining local authority, saddled with the debts of the past, with a heavy load of unemployed and with services proportioned to past population, must raise its rates further and frighten away yet more of the remainder. New housing, new local government services must be provided elsewhere. But the difference in social cost is seldom, if ever, fully reflected in differences in wage rates and in costs to a prospective employer. Transference may be a necessary evil, and may need to be developed further, but the alternative possibility of attracting new industries must be first explored to the utmost.

It is here that the reports will probably be regarded as most disappointing. The four areas with which the reports are concerned possess some of the best raw materials and a large proportion of the most skilled labour of the country. They are not derelict through any wholesale exhaustion of their mineral wealth. Why then has Capital failed to make use of the available resources? Captain Euan Wallace has examined this problem in greater detail than have the other investigators and it will be of interest to consider his conclusions. In the first place, he is convinced that despite the derating of industrial hereditaments, the burden of high rates remains a strong deterrent to new industrial influx. Local rates in Jarrow were 17*s.* 9*d.*, the block grant was equal to a further 13*s.* 2½*d.*, and of the total 48 per cent. was required for public assistance. In several of the depressed Welsh towns they varied between 21*s.* and 27*s.* 6*d.* Even with these high rates the most necessary of local services were inadequately maintained. No prospective employer will willingly subject himself and his future employees unnecessarily to these exactions. Captain Euan Wallace pleads, therefore, for the removal by some mechanism of the unequal burden of rates due to expenditure on public assistance. "Apart from the fact that the present situation does not appear to be defensible on grounds of equity or logic, its effect upon the depressed areas is not constant but cumulative."

The second ground for reluctance to start industrial enterprises in the Durham area he believes to be that of Trade Union activity. Both he and Sir Arthur Rose claim that their areas have gained a reputation undeserved by the facts of recent years. The average of working days lost by disputes in Durham has

been substantially less than that of the country as a whole. It remains, nevertheless, probable that the political reputations of the Clyde, South Wales and Durham will, even if unreasonably, deter the prospective employer.

Captain Wallace puts forward as a further handicap to the possible Durham employer the over-centralisation of banking policy and decisions. Amalgamations have implied that all decisions of importance must be made in London and the distant authorities are more concerned than their predecessors with assets and balance sheets and less with probable earning capacity. An even more important deterrent he finds in the psychological atmosphere of a depressed area. Anyone who has seen the rust-holed roofs and the grass-grown railway tracks of a derelict works, or the former employees gathered in despairing groups at the corners of a main street whose shops, save for a few chain stores financed from outside, are paintless and half empty, whose cinemas and public-houses are bankrupt and closed, would himself feel disinclined for any but altruistic reasons to start a business in such a place. Captain Wallace pleads for the clearing of these abandoned works and derelict buildings, with their heaps of rubbish and disused materials, and for their conversion either into public open spaces or into sites available for new industrial undertakings.

The most important factor of all remains. Prospective employers tend to think too much in terms of the accessibility of the prosperous markets of the South of England, too little in terms of the possible local markets of the North. Industry is attracted by prosperity, repelled by depression. It tends, therefore, to move constantly towards the more prosperous Southern Counties even in those conditions in which, if the North were prosperous, the industry would be better located there. Having appreciated this point both Captain Wallace and Sir Arthur Rose, when it comes to practical policy, recommend nothing more than "to remove or minimise the causes which operate to exclude certain areas from the industrial developments which are now taking place," [1] for "any artificial direction of industry would probably prevent development." [2] Certainly their suggestions for removing obstacles are valuable, but it is surprising that both should be so concerned to maintain a world of pure *laissez-faire*, which in so many other respects they are prepared to abandon, and surprising also that neither has observed that the argument for protection or assistance, which *laissez-faire* economists have always conceded in the case of infant industries, is as valid when

[1] Captain Wallace, p. 82. [2] Sir Arthur Rose, p. 223.

applied to the problem of location within a given national area as it is to the problem of location in the international sphere.

The problem of the derelict areas really conceals two separate problems: the first the general restoration of prosperity through British industry as a whole, the second the control of the precise industrial and geographical settings in which that recovery is to take place. It is sometimes suggested that the derelict areas are not a separate problem at all, that they are merely a symptom of the larger problem of the restoration of full employment in a changing world, and that, given any real recovery of trade, there would be mobility enough to secure re-employment of the vast majority of those at present unemployed in these areas. There is, of course, a measure of truth in this, and the restoration of general prosperity is almost certainly a necessary condition of any effective solution of the problem of the depressed areas. But with the high degree of immobility both between place and place, and as regards the older men between industry and industry, the frictions to be overcome are very great. A financial and industrial policy which, if applied uniformly to the country as a whole, might attract workers out of the derelict areas or restore prosperity within them, would almost certainly produce exaggerated conditions of boom in the more prosperous parts of the country, and an almost inevitable relapse once the boom had achieved its results in attracting labour. This may be the necessary price of general industrial reorganisation and adaptation to post-war trade conditions. But there is a real danger that exaggerated boom conditions will attract workers into places and industries quite other than those in which in more normal conditions they would be required.

There is a second, and I think a more fundamental, objection to leaving the problem of the derelict areas to solve itself in the process of a general trade recovery. There is no reason to believe, and good reason to disbelieve, that *laissez-faire* will redistribute unemployed resources in the most economical way. It will redistribute them in accordance with the scheme of demand which exists at this moment (and as modified by the subsequent movements) and not in accordance with the scheme of demand which would exist under full employment in the present geographical setting. It will redistribute them in accordance with the scheme of external economies which exists at the moment and not in accordance with the scheme which would exist under full employment in the present geographical setting. The relevant problem of industrial location inside the British Isles to-day is

not where industries ought to be on the assumption that South and East England are prosperous and the North and West severely depressed, but rather where our industries ought to be when the North and West (granted sufficient internal migration to clear hopelessly derelict areas) are once more prosperous. What is required then is some form of differential economic policy, offering a sufficient stimulus to recovery in the depressed areas and yet not an exaggerated stimulus in those areas which are already relatively prosperous.

It is to the interest of no one employer, unless he is on a very large scale and unless his markets are mainly abroad, to go to the North and restore prosperity there. It must be the task of the Government to attract him there in all those cases in which, on our criterion, he ought to have gone there. The Government may, if it likes, do this by distributing its own orders not purely on the basis of the lowest tenders but in accordance with present public policy or future strategical policy. It is indeed almost pathetic to find each of the investigators claiming especial precedence for his area in the distribution of Government orders. But Government orders are not sufficiently large in present circumstances to make the difference between depression and prosperity, though they may well assist. Internal tariffs, even if politically possible, would be undesirable. There remain three methods whereby a Government could stimulate the location of industry in a particular area. There is, first, the method of subsidy, either directly or indirectly in the provision of facilities for the new industries. There is, second, the method of encouraging special wage bargains in depressed areas, so that lower labour costs will attract the new industries. The remaining method is that of expenditure on useful works, wherever a project can be discovered that shows reasonable prospects of a return on the capital invested. The failure of the old staple industries has led to such secondary unemployment and to such diminution of local incomes that those industries which provide commodities other than primary necessaries, the minor luxuries of the fully employed salaried or skilled worker, cannot flourish in the market conditions of the North. If there could be such restoration of these incomes that investment could profitably be made in these industries, and if they could be built up on a local market to serve not only that market but more distant markets as well, then the effects of public works need not be as ephemeral as they are supposed, for example by Sir Wyndham Portal, to be.

The investigators are nevertheless probably right in thinking

that the efficacy of public works as a sole means of curing local unemployment may not be very great. Public works are most efficacious where the system in which they are expected to produce their results is most nearly closed. But the economy of Tyneside or of a South Wales coal valley is very far from being closed. The exceedingly interesting inquiry into the conditions in Brynmawr, conducted under the leadership of the Society of Friends, would appear to indicate that approximately 60 per cent. of expenditure in that derelict town is on goods imported into the town, approximately 40 per cent. on goods or services produced in the town. If this ratio would apply to increments of income as well as to the average of the whole, and if all additional income were spent and none saved or used to repay debts, then £100 of direct income from public works would yield only some £67 of local secondary incomes. That is, three men put into employment directly would employ indirectly only two more. Clearly South Wales as a whole, or the North-east Coast as a whole, is far more nearly self-sufficient than a single small town. The amount of secondary employment in the whole area may be substantially greater and induce further secondary employment in the small towns themselves. Nevertheless, it remains true, I think, that when account has been taken of probable savings and debt repayments and of increased actual payments of rents the local secondary employment is likely to be comparatively small. This is the more likely where incomes are increased after a period of severe depression and local sources of supply for the newly-demanded goods are insufficient, so that they are brought in from the already prosperous areas.

If, then, a temporary restoration of local incomes is to produce any permanent effect it is necessary that as much as possible of the addition to incomes shall be spent at each stage on local products. This requires that local producers shall be in a position to expand production as readily as possible, and that every facility shall be given for the establishment of new firms. Special facilities for loans at exceptional rates of interest to borrowers from these areas, the greatest possible remission of taxation, a little encouragement to "buy from your own best customers," combined with the removal of as many as possible of the obstacles considered by Captain Wallace, might help to secure that when incomes exist they will be spent in such a way as to give the greatest addition to local employment. But in the present situation the existence of facilities to expand production is almost certainly insufficient. Until demand for products is created neither a low rate of interest

nor special facilities can persuade producers to invest. The initial impetus must come mainly from such activities as the onslaught on the housing problem and the improvement of local communications which Captain Wallace himself demands. A policy of caution here may defeat itself. There is in almost every case a minimum increase of demand necessary to stimulate new production. It is by no means impossible that a smaller total amount spent more rapidly should produce a greater effect than a larger amount dribbled out more slowly.

There is one further possibility that deserves more consideration than it has yet received. The problem of the special areas is in each case predominantly one of the coal industry. The location of the production of coal is not at present entrusted to the ordinary working of economic forces. It is planned by the coal-owners themselves under the powers granted to them by the Coal Mines Act of 1930. In the scheme prepared by the coal-owners under that Act it is laid down that, in making allocations as between district and district, the Central Council must take into account all relevant information, " not excluding the relative position of districts before the war." But quite evidently the difficulties of mobility out of the coal industry are not uniform throughout the country. There is much to be said in a period of reviving trade for increasing the allocations to districts from which mobility is relatively difficult, in so far as that can be done without inflicting damage on particular coal-consuming industries. Such a policy would be justified not on the grounds of planning, but because it would serve to reproduce the conditions which would exist if wages moved freely in accordance with the local demand for labour, and output was determined solely by costs and profits. In practice the exact opposite has been allowed to happen. The proportionate share of Scotland, South Wales, Durham and Cumberland in the total allocations during each of the years 1931–33 has been substantially less than their share of the output either for 1913 alone or for the whole five years immediately preceding the war.

AUSTIN ROBINSON

Sidney Sussex College, Cambridge.

Report of Monetary Committee, 1934, New Zealand. Pp. 128. Minutes of Evidence, Monetary Committee, 1934, New Zealand. Folio. Pp. 745. (Government Printer, Wellington, N.Z. 1934.)

NEW ZEALAND has followed the example of this country and of Canada in appointing what has come to be known as a " Mac-

millan Committee"; though in this case, unlike the other two, there was no Lord Macmillan to preside. The New Zealand Monetary Committee was appointed after the decision had been taken to establish the Reserve Bank of New Zealand, but before the new Reserve Bank had been actually set up. I gather that the Committee came into existence, not so much to consider the duties and potentialities of the new Reserve Bank, as in response to the activities of Douglas Credit enthusiasts in New Zealand.

As in the case of the other Macmillan Committees, the Report serves the very useful purpose of providing for the first time an excellent up-to-date description of the actual monetary and banking system of the country. Probably the expert secretariat, Mr. Ashwin, Dr. Sutch, and Mr. Barker of the New Zealand Treasury are mainly responsible for the good quality of the descriptive work which fills a gap in our information. It should prove useful in bringing economic education in New Zealand into closer touch with the economic facts of the country, whatever may be the controversial value of the Report in its influence on policy.

Again, as with our own Macmillan Committee, the members seem to have broken up into two partly irreconcilable groups—the division in New Zealand being between those who were prepared to endorse, broadly speaking, the existing monetary policy of the Government of New Zealand, and those with definite sympathies for the Douglas Credit proposals or some similar system. And corresponding to Lord Bradbury there was Mr. Downie Stewart, formerly Minister of Finance, to write a minute of his own from the strictly old-fashioned *laissez-faire* point of view.

The majority of the Committee came to the conclusion that there was not a great deal for the Government to do, beyond what it was doing already, to remedy the economic crisis in New Zealand by monetary methods. At the same time they had a number of suggestions to make, several of which have been carried into effect since they reported. In particular they recommended that New Zealand should definitely come on to a sterling exchange standard and that the exchange should be stabilised at £125 New Zealand to £100 sterling. As a corollary to this they favoured the sale of the existing stock of gold. They recommended an amendment of the Reserve Bank Act to facilitate open-market operations by the purchase of long-term securities as well as of short-term securities. They recommended the amalgamation of the Government Lending Departments, the establishment of

a National Mortage Corporation, a reduction of the rates of interest on deposits and over-drafts, and the setting up of a Development Commission to handle the Public Works programmes as a whole with a view to a coordination of policy; all these measures being with a view to the encouragement of home investment. These proposals have, I think, either been adopted by the Government or are under favourable consideration.

The Committee make out, in my judgment, a strong case for the view that there is little or nothing to hope from more drastic inflationary proposals. The table printed below, compiled for the

Year.	Volume of Production apart from Buildings.	Volume of Exports.	Volume of Imports.	Volume of Goods available for Consumption.
1926	100	100	100	100
1927	108	108	96	102
1928	117	112	100	111
1929	122	116	114	121
1930	124	119	106	118
1931	117	120	69	92
1932	114	132	66	83
1933	122	151	66 [1]	82

[1] Figure not available, but assumed to be the same as for 1932.

Committee by the Government statistician and the Treasury, demonstrates overwhelmingly that the troubles of New Zealand have been primarily due to a disastrous worsening in the terms of trade. The increase in the volume of exports relatively to the volume of imports is doubtless partly due to the substitution of the repayment of foreign obligations for the incurring of additional loans; and it would have been useful if the extent of this could have been indicated. Nevertheless, it seems clear that, even after allowing for this, the decline in consumable income has been mainly due, not, as in some other countries, to a serious decline in the volume of production, but to a decline in the purchasing power of exports over imports. The volume of production in New Zealand is as high as it has ever been, and the volume of exports is much greater than any previously recorded figures. The indications are, therefore, that any attempt further to expand the volume of exports could only result in a still further worsening of the terms of trade; whilst for a country in which foreign trade occupies so large a proportion of the national economy as in New Zealand, an attempt to change over on a large scale from working for export to working for home investment or home consumption would probably involve too severe a reduction in the standard of life. There is, in truth, no remedy for New Zealand

except a recovery in her terms of trade with the rest of the world to a more normal level.

Indeed the above figures suggest that New Zealand may have already gone farther than is prudent in the direction of trying to restore her earning power by expanding her exports. During the exchange collapse on the Continent in the post-war period, it was found that a point comes when a further decline in the exchange actually diminishes the foreign purchasing power of a country, the over-stimulation of exports by an extremely depreciated exchange causing their aggregate value to fall in terms of foreign currency in spite of an expansion in their volume. If the New Zealand Committee had accepted the advice given by some witnesses that they should devalue their exchange still further, it seems not unlikely that the result would have been to worsen rather than improve their effective earning power. In common with Australia, New Zealand has already gone a considerable distance in the direction of accepting modern policies and has taken full advantage of the assistance of her team of economists, Professor Tucker, Professor Belshaw, Mr. D. O. Williams and others. Thus, there was less room than there would have been in many other countries for such a Committee as this to recommend further drastic changes.

A considerable part of the Report naturally deals with the proposals of the Douglas Credit organisations, since there was a widespread public demand in New Zealand for an authoritative examination of such proposals. As it happened, Major Douglas was himself in New Zealand when the Committee was set up, so that he was invited to give evidence in person, as well as the local head of the Douglas Credit movement, Colonel Closey, the evidence of the Major and the Colonel between them occupying some 85 folio pages. With the Major himself the Committee had great fun, the proceedings becoming at times almost hilarious. It was left to Colonel Closey to put forward the orthodox Douglas solution, and Major Douglas devoted most of his evidence to a new scheme specially designed for New Zealand, by which a proportion of the reserves of the banks was to be credited to customers with over-drafts on a *pro rata* basis of the average over-draft of these customers during the last three years, the shareholders in the banks being compensated by the State for any injury they might thereby suffer, together with something obscure but analogous in the case of the insurance companies. The majority of the Committee summed up severely :—" The Douglas Social Credit proposals are perhaps idealistic in intention but certainly detrimental and

retrogressive, if ever the application of them were admitted. The express and implied assumptions cannot bear logical analysis nor even, allowing for the falsity of the assumptions, is there any attempt made to derive logical conclusions." Those who are interested in observing the Douglas school under examination by an official committee will find a *locus classicus* in the New Zealand Minutes of Evidence.

J. M. KEYNES

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Langmuir, D.
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Lewis, T. H.
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Luz, Dr. F.
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Shetty, S. S.
Shone, R. M.
Shuloff, E. H.
Smith, G. E.
Smith, R. F.
Spencer, R. J.
Stone, J. R. N.
Sully, L. T. G.
Taylor, A. H.
Taylor, J. S.
Thirlby, G. F.
Thomas, A. R.
Thompson, G. P.
Tollinton, R. B. B.
Tuffin, F. S.
Ugarte, S.
Vithal, L. K.
Wade, W.
Waran, K. V. S.
Wells, P. A.
Westby, G.
Westwood, J. C.
Whelen, J. H., Jr.
White, W. E.
Wilkinson, J.
Woodworth, L. D.
Wright, Rev. R. R.

The following have compounded for life membership of the Society :—

Beasley, Prof. C. G.
Bell, Miss H. M.
Blellock, D.
Butterfield, G. W.
Dinsdale, W. A.
Gambino, A.
McDougall, J. L.
Morgan, R. S.
Phillips, O. E.
Robson, L. W.
Sethna, M. J.
Stewart, Blair.
Tucker, E. S.
Villard, H. H.
Wilson, W. B.

The following have been admitted to Library membership of the Society :—

Lincoln University Library, U.S.A.
Liverpool Steam Ship Owners' Association.
Political and Economic Planning, London.
Reserve Bank of New Zealand.

The National Bureau of Economic Research of New York has lately published two further volumes which are available to members of the Royal Economic Society on special terms, namely :

1. *Industrial Profits in the United States*, by Ralph C. Epstein, Professor of Economics in the University of Buffalo. 672 pp. Published at $5, but available to members of the Royal Economic Society at 15*s*.

Dr. Epstein has secured fuller data concerning profits than any of his predecessors. For 2,046 business houses and for 664 trading corporations he has an unbroken record of income statements for each of the years 1919 to 1928. Supplementary statements for 71 corporations carry the record to the end of 1932. With these materials at his disposal, he is able to increase greatly our knowledge of what rates of profit business enterprises earn upon the capital invested and how these rates fluctuate. Broadly speaking, he finds that competition is not an efficient leveller of profits among different lines of investment even in cases where there are no legal limitations.

2. *Mechanisation in Industry*, by Harry Jerome, Professor of Economics in the University of Wisconsin. Selected Bibliography, 400 pp., 55 tables, 5 charts. $3.50. Available to members of the Royal Economic Society at 10*s*. 6*d*.

Professor F. C. Mills writes in an introductory preface : " We find here a wealth of detail as to the actual changes which mechanisation has involved over a wide area of industrial activity. Conveyors, electric hoists, mechanical stokers, concrete mixers, steam ditchers, steam-jet weed destroyers, rotary ballast sweepers, power tie tampers, portable escalators, trench excavators—these are the stuff of modern industry. Here is realism about the industrial process. But Dr. Jerome sees beyond his details. He has emphasised the wide range of consequences which must be traced if one is accurately to measure the effects of a mechanical change. In doing so he provides an effective corrective alike for the visions of doom and for the prophecies of a mechanical millennium."

Members may also be reminded that another volume in the same series, *German Business Cycles*, by Dr. Carl T. Schmidt, is now available to members at a price of 7*s*. 6*d*. This was mentioned under Current Topics in the JOURNAL of June 1934, but was not included in the general catalogue circulated to members.

A further volume is also available in the London School of Economics series of reprints which was mentioned in the general

catalogue but without a price, namely, Carl Menger (1871), *Grundsätze der Volkswirtschaftslehre*, 1934; pp. xi + 286, price 7*s*. 6*d*.

Applications for any of the above should be sent to the Assistant Secretary, Mr. S. J. Buttress, 6 Humberstone Road, Cambridge, accompanied by a remittance.

The Joint Committee on Materials for Research of the American Council of Learned Societies and the Social Science Research Council of the United States announce that the following material is now available :

Hearings on the Codes of Fair Competition held under the National Industrial Recovery Act, 68 film volumes, and the *Hearings on the Marketing Agreements, Codes, Licences, and Processing Tax Matters of the Agricultural Adjustment Administration*, 58 film volumes, copies by the Joint Committee on Materials for Research, Washington, 1934.

In response to requests from Libraries the Council is prepared to make these materials available in film form.

The A.A.A. materials comprise 136,000 documents, which include the stenographic reports of the hearings and copies of data submitted in support of testimony prior to and subsequent to the hearings in the form of letters, telegrams, petitions, case studies, charts, statistical tables, pamphlets, books, etc. The N.R.A. materials comprise 150,000 documents, which do not include the inaccessible confidential data known officially as A and B material, but which contain transcripts of all the testimony and exhibits submitted during the hearings.

Film copying was considered the only feasible method of reproduction, since the cost per page was reduced from two cents charged by the official reporters to approximately one-eighth cent, and since the film produced is relatively permanent and non-inflammable and requires little storage space. With the assistance of a *Guide* to the A.A.A. and an *Index* to the N.R.A. films, which will be furnished with the film sets, the materials can be handled more easily in film form than in their original form. If read by means of a Recordak projector (Model No. 8 or the Library Model, taking both 16 and 35 mm. film), the film is just as legible as the original.

In accordance with its plans for a Publishing Service, the Joint Committee will furnish film copies at cost on a sliding scale basis, whereby the price of each set is determined by the number

of subscriptions. Each subscription will include a fixed charge of $2\frac{3}{4}$ c. per foot for the positive film copy plus a charge designed to amortise the expenses incurred in making the original master negative. A set of the N.R.A. films will be furnished on payment after receipt of invoice of an initial sum of $200 and on agreement to pay an additional sum, to be determined by the number of subscriptions received by March 1935, which is not to exceed $29.70. For the A.A.A. films an initial payment of $170, plus a charge not exceeding $22.78, will be required. Inquiries should be addressed to T. R. Schellenberg, Executive Secretary, Joint Committee, Western Reserve University, Cleveland, Ohio.

RECENT PERIODICALS AND NEW BOOKS

Journal of the Royal Statistical Society.

PART IV, 1934. *Discussion of Methods used in Different Countries for Estimating National Income.* PROF. A. L. BOWLEY and others. *On the Two Different Aspects of the Representative Method: the Method of Stratified Sampling and the Method of Purposive Selection.* J. NEYMAN.

Economica.

NOVEMBER, 1934. *Capital and the Heritage of Improvement.* E. CANNAN. *Carl Menger.* F. A. VON HAYEK. *Measures of the Growth of British Industry.* C. SNYDER. *Notes on the Pure Theory of Public Finance.* F. C. BENHAM. *Recent Land Tenure Changes in Mid-Devon.* J. J. MACGREGOR.

Review of Economic Studies.

OCTOBER, 1934. *The Glasgow Building Industry.* A. K. CAIRNCROSS. *Taxation and Production.* U. K. WEBB. *Fluctuations in Capital and the Demand for Money.* S. P. CHAMBERS. *Economic Theory and Socialist Economy.* A. P. LERNER.

The Manchester School.

VOL. V, NO. 2, 1934. *Remarks on the Relationship between Economics and Psychology.* L. C. ROBBINS. *Spending and Investing.* G. W. DANIELS.

International Labour Review.

SEPTEMBER, 1934. *The Eighteenth Session of the International Labour Conference. Aspects of Planned Economy in Italy.* M. MARCELLETTI. *The Social, Economic, and Legal Conditions of Domestic Servants:* II. DR. E. MAGNUS.

OCTOBER, 1934. *The Effects of a Public Works Policy on Business Activity and Employment.* M. MITNITZKY. *Openings for Settlers in Argentina.* DR. E. SIEWERS. *The Position of Wireless Operators in the Mercantile Marine.* COMMANDER E. MANDILLO.

NOVEMBER, 1934. *The Origins of the International Labour Organisation.* C. W. JENKS. *Possibilities of International Action.* G. MÉQUET. *Productive Works in Greece: Land Reclamation and Settlement in Macedonia.* A. DOMESTICHOS. *Jewish Colonisation in Palestine: I.* M. BERENSTEIN.

The Sociological Review.

JANUARY, 1935. *Property and the Courts of Justice.* E. JENKS.

OCTOBER, 1934. *The Political Consequences of Economic Planning.* D. MITRANY. *The Number of Families in England and Wales.* GRACE G. LEYBOURNE.

The Eugenics Review.

OCTOBER, 1934. *German Eugenic Legislation.* A. LEWIS. *The Decline in the Birth-rate.* DR. W. WAGNER-MANSLAU. *The Graz Sterilisation Trial.* F. TIETZE. *International Federation of Eugenic Organisations.* C. B. S. HODSON.

The Economic Record.

DECEMBER, 1934. *Investment Policy in a Progressive Economy.* A. G. B. FISHER. *The Schedule of Interest Rates and Investment.* L. G. MELVILLE. *The Dilemma of Trade Unionism.* L. ROSS. *Limited Competition.* E. R. WALKER. *Tariff Level Indices.* J. G. CRAWFORD.

The South African Journal of Economics.

DECEMBER, 1934. *Co-ordination and the Size of Firm.* PROF. W. H. HUTT. *150 Years of Economic Contact between Black and White.* H. M. ROBERTSON. *Some Aspects of the Economic Life of the South African Bantu.* PROF. G. P. LESTRADE. *The Combination of the Factors of Production in Agriculture.* A. P. VAN DER POST.

Quarterly Journal of Economics.

NOVEMBER, 1934. *Solar and Economic Relationships:* a Preliminary Report. C. GARCIA-MATA and F. I. SHAFFNER. *The Effects of the Recovery Act upon Labour Organisation.* D. A. MCCABE. *Long and Short Term Credit in Early American Banking.* B. HAMMOND. *What is Perfect Competition?* JOAN ROBINSON. *The Influence of Marginal Buyers on Monopolistic Competition.* A. J. NICHOL.

The American Economic Review.

DECEMBER, 1934. *"Fundamental Equations": New Interpretation.* K. RÜBNER-PETERSEN. *Concept of Property: Labor Cases.* T. R. WITMER. *How Germany reduced Unemployment.* F. BAERWALD. *Quantity Theory and Wages Fund.* K. F. FICEK. *Federal Home Loan Bank System.* J. E. MCDONOUGH.

Journal of Political Economy.

OCTOBER, 1934. *The New Model Trade Agreements.* E. B. DIETRICH. *Discrimination between Places under Section 3 of the Interstate Commerce Act.* D. P. LOCKLIN. *The External Depreciation of the Dollar and its Effect upon the Price Level in the United States.* S. D. ZAGOROFF.

DECEMBER, 1934. *The Status of Unemployment Insurance in Great Britain.* HELEN HOHMAN. *Crisis and Readjustment in Australia.* A. G. B. FISHER. *Unemployment Insurance in Germany.* D. CREAMER. *Professor Pigou's "Theory of Unemployment."* P. M. SWEEZY.

Annals of the American Academy of Political and Social Science.

NOVEMBER, 1934. *Social Welfare in the National Recovery Program.* Setting forth the main features of current measures of relief and rehabilitation; followed by a monograph on the Conduct of German Foreign Affairs.

JANUARY, 1935. *Radio: The Fifth Estate.*

Wheat Studies (Stanford, California).

OCTOBER, 1934. *Decline in Wheat Flour Export during the Depression.* The Export flour trade of the world has undergone a pronounced decline during the past five years. The decline of the flour trade is greater than that in wheat. In particular the flour trade of the U.S.A. has suffered disproportionately. The present study is concerned with the extent and causes of this decline. The unfavourable factors are described and it is insisted that a high wheat price in the U.S.A. is a direct deterrent to export of American flour.

NOVEMBER, 1934. *Prices of Cash Wheat and Futures at Chicago since 1883.* This study makes available a weekly record of Chicago wheat prices for more than fifty years. It includes cash prices in addition to prices of the four principal futures. This series is unique in that it provides throughout the particular price of the spot wheat on which the futures price is based. Existing compilations of prices of "contract" wheat attain this result only imperfectly.

DECEMBER, 1934. *The World Wheat Situation, 1933–4. A Review of the Crop Year.* The crop year 1933–4 was one of disappointed hopes. Early indications suggested a crop small enough to secure substantial reduction of the world surplus. As the season progressed estimates grew larger and larger. The appraisals of December 1934 were 10 per cent. higher than the forecasts of August and September 1933. Gold prices reached a new low level, though the effects in several countries were mitigated by depreciation or protection. Price fixing, subsidies to exports, and barriers to imports were more in evidence than ever before. Year-end stocks reached a new high level. The first attempt at international control was unsuccessful in its major objectives. "Wheat adjustment" in the U.S.A., while domestically a gratified success, had little or no favourable influence on the international position.

Revue d'Économie Politique.

SEPTEMBER–OCTOBER, 1934. *Avant-Propos.* G. PIROU. *Expériences Alemandes.* C. VON DIETZE, H. VON BECKERATH, F. SYRUP. *Expériences Américaines.* L. H. BEAN, V. JORDAN, J. P. WARBURG. *Expériences Anglaises.* L. C. ROBBINS, A. PLANT. *Expériences Italiennes.* G. BASSANI. *Expériences Internationales.* F. MAURETTE. *Plans d'Économie Dirigée.* H. NOYELLE.

NOVEMBER–DECEMBER, 1934. *Évolution du Crédit et Contrôle des Banques.* M. ANSIAUX. *Liason entre prix et monnaie.* R. WOLFF.

Journal des Économistes.

OCTOBER, 1934. *L'Idéal Mondial et les Forces qui le contrarient.* E. PAYEN. *La Tragédie de Marseille.* X. . . . *Le Commerce Extérieur des Principaux Pays pendent le 1er Semestre 1934.* R. J. PIERRE. *La Conférence de Londres* (Mai 1934). FERNAND-JACQ. *Le Libre-Échange, juillet 1934.* B.D.L.L.E.

NOVEMBER, 1934. *Le Budget de 1935 et le Nouveau Gouvernement.* E. PAYEN. *La Conférence du Bloc Or et les Rapports Économiques Franco-Belges.* C. ENNESCH. *La Yougo-Slavie.* R. J. PIERRE. *L'Œuvre de la Caisse d'Amortissement.* N. . . . *Les Institutions de Crédit Communal en Pologne.* C. DE KOWNACKI.

DECEMBER, 1934. *L'Industrie Pétrolière.* R. J. PIERRE. *Léon Walras et son Temps (1834–1934).* G. H. BOUSQUET. *Méditerranée : Espagne–Portugal.* M. CARSOW. *Les Chemins de Fer en Pologne.* G. DE KOWNACKI. *La Monnaie italienne et sa Couverture.* E. P.

Revue de l'Institut de Sociologie.

OCTOBER–DECEMBER, 1934. *Les Classes Moyennes et la Crise en Belgique.* E. MAHAIM. *XVI^e Semaine Sociale Universitaire de l'Institut de Sociologie Solvay.* J. MASSART. *Économie et Politique d'Aujourd'hui.* R. BEHRENDT.

Journal de la Société Hongroise de Statistique.

1934. NOS. 1–2. *About Politics and Documentation.* COUNT P. TELEKI. *Contributions aux questions de source et de méthode de la statistique historique hongroise.* G. THIRRING. *Problèmes des Indices.* É. VARGA. *Les Établissements de Crédit de Hongrie.* J. SZIGETI.

1934. NOS. 3–4. *Questions de politique démographic.* B. KENEZ. *Considerations théoriques pour juger le mouvement des prix.* F. HELLER. *Le service statistique de l'État hongroise en dehors de l'Office Central Royal Hongroise de Statistique.* D. LAKY.

Weltwirtschaftliches Archiv.

NOVEMBER, 1934. *Wirkungen der extremen Formen der Inflation auf den Wirtschaftsorganismus.* C. GINI. The author analyses the forms and effects of *Hyperinflation*, which he defines as an inflation of such a degree of intensity that the useful effects are more than upset by the detrimental. This may come about by an excess in the degree of inflation (*Ultrainflation*) or by an excess in the pace of inflation (*Grossinflation*). The latter accounts for most of the detrimental effects. *Währungsentwertung und Krisenüberwindung in England.* O. EMMINGER. An investigation into the effects of the devaluation of the sterling and the monetary policy of the Bank of England leads to the conclusion that the experiment of 1931 was not as successful as it might have been had it been undertaken earlier and had the Bank of England from the outset pursued a bolder monetary policy. *Die Verschiebung der Wirtschaftskräfte im Fernen Osten.* J. F. HALKEMA-KOHL. Japan, India, the Dutch Indies and China represent different stages of industrialisation. The author does not think that political world leadership will be transferred to the Eastern Powers in the near future. *Die Tschechoslowakei in der Weltwirtschaft.* E. DITTRICH. The economic structure of Czecho-Slovakia is similar to that of the former Austro-Hungarian monarchy. But Czecho-Slovakia is much less self-contained. The future of her foreign trade rests with Middle and Western Europe, not with the Balkans.

JANUARY, 1935. *Neue Formen der Weltwirtschaft.* G. MACKENROTH. The liberal-capitalistic organisation of foreign trade has broken down. A new organisation must be built upon regulated home markets. Boards for the control of exports are insufficient. In future internal production will be stabilised and foreign trade determined by political circumstances. *A Rigid Economy in a Dynamic World.* E. M. PATTERSON. Economic, social and other

changes are buffeting us in greater numbers and with increasing violence. We shall have increasing need for an adaptable economic structure. But the huge amount of specialised fixed capital and fixed charges make this structure rigid. Our fiscal structure is particularly unadaptable. Efforts at gaining control have failed both in the financial and industrial field. The author recommends a clear-cut adherence to the gold standard, pay-as-you-go policy in government expenditure, a more elastic tax system, orthodox private finance holding down the ratio of debentures. *Staat, Sozialökonomie und Finanzwissenschaft.* B. GRIZIOTTI. It is argued that all economic science ought to be political science. The primacy of the State is stressed. From this point of view several schools of thought in the science of public finance are criticised. *Der Wirtschaftsaufbau Spaniens und die Problematik seiner Aussenhandelspolitik.* R. P. GRAU. The present economic structure of Spain is analysed, its economic policy described and discussed, its conditions of equilibrium formulated.

Jahrbücher für Nationalökonomie und Statistik.

NOVEMBER, 1934. *Der Begriff homo oeconomicus und sein Lehrwert.* O VON ZWIEDINECK-SÜDENHORST. It is the great mistake of the classical economists and their successors to conceive of the national economy as a society made up of "leaders of production teams." This led them so far astray as to consider egoism as motive of economic action and the maximisation of money gains as its aim, while actually the aim is reasonable allocation of one's own or other people's money to one's own or other people's purposes. Thus conceived the notion of the economic man is useful to science and policy. *Cassels arithmetische Behandlung des ökonomischen Gleichgewichtsproblems.* T. SCHMID. Cassel's systems of equations, though in some respects defended against his critics, are insufficient to determine a general equilibrium even from a purely mathematical point of view. It is proposed to remedy this by taking as given the distribution of expenditure between different consumption goods as obtained from available statistics. *Die Entwicklung des gemeinnützigen Bauwesens in Deutschland seit Januar 1933.* O. GLASS.

DECEMBER, 1934. *Die soziale Verbundenheit und ihre Gestaltungen.* E. JURKAT. *Geistesgeschichte der deutschen Sparkassen im Aufriss.* A. SOMMER. German Saving banks owe their origin to philanthropic ideas at the end of the eighteenth century. About 1850 they were used by the governments as a means of reconciling the workers with the existing order of society. This attitude was abandoned in the following liberal epoch. Now there is a new tendency on the part of saving banks to adapt themselves to the State ideology. *Der Mensch in der Siedlung.* H. J. SERAPHIM. Since the National-Socialist revolution the purpose of the German settlement policy has completely changed. It has ceased to be a part of economic and social policy, but is now an act of cultural and population policy. Creation of German peasants is the ultimate aim.

JANUARY, 1935. *Der Gemeinwert.* T. SURANYI-UNGER. The notion of social value is developed. Social values in a capitalist and a socialist economy are contrasted. A direct measurement of

social values is impossible, but indirect conclusions can be drawn from the nature of the taxes and the public expenditure and from the direction of the State interferences. *Die Neugestaltung der Verkehrspolitik im nationalsozialistischen Deutschland.* A. F. NAPP-ZINN. Three leading principles are being realised by the new German transport policy—central regulation, the conception of all sorts of transport as one service, and the leader principle in administration. *Die Entwicklung der deutschen Sozialversicherung seit dem Jahre 1933.* H. MÖNCH.

Schmollers Jahrbuch.

OCTOBER, 1934. *Wirtschaftslogik.* E. SCHAMS. The application of the notion of the mathematical function as applied to the system of dependent relationships, constituting economic reality, is shown to be logically consistent and adequate. The objection that it is only a mechanistic analogy is overruled. *Statistik und theoretische Nationalökonomie.* O. KÜHNE. The development of the science of statistics from a *notitia rerum politicarum* to a numerical method auxiliary to all other social sciences is considered as a deterioration and a programme for its resuscitation is outlined. *Das Werden der Verbindung von Landwirtschaft und Gewerbe in Württemberg.* G. STOCKMANN. *Das Werden der betrieblichen Sozialpolitik als Wissenschaft in Deutschland.* L. H. A. GECK. The author traces the history of social reform movements inside the community of the factory or enterprise and the development of the branch of science dealing with them. *Konkurrenzsystem und berufsständische Idee.* F. K. MANN. A review of *Adolf Weber's* text-book of economics. *Macht und ökonomisches Gesetz.* H. PETER. In the economic theory of a free market State interference has the character of a disturbance, and rightly so. The State by abolishing the free market cannot suspend the economic laws, but can make them meaningless. On the other hand, the theorems of economics ought not to have any bearing on economic policy.

Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte.

PART III, 1934. *Die Saarwirtschaft um 1800.* H. OVERBECK. The economic activities of the Saar in the past are described under application of the methods of modern economic geography. It is argued that the Saar owes its industrial development to the German princes, not to Napoleon. *Die oberdeutschen Kaufleute in Lyon im letzten Viertel des 16. Jahrhunderts.* K. VER HEES.

Zeitschrift für die gesamte Staatswissenschaft.

NOVEMBER, 1934. *Die deutsche Staatswissenschaft.* E. R. HUBER. *Gestaltung und Gestaltwandel der Volkswirtschaft.* H. BENTE. *Gesamte Staatswissenschaft und exakte Wirtschaftstheorie.* A. PREDÖHL. *Gegenwartsaufgaben der deutschen Soziologie.* H. FREYER. The issue has the character of a manifesto on the task and position of the social sciences in the National-Socialist State. While HUBER, BENTE, and FREYER are mainly concerned with the change which the sciences they represent (constitutional law, economics, sociology) will have to undergo to fit the new state of affairs, PREDÖHL pleads for preserving the tools of economic theory in the service of the new idea.

Zeitschrift für Nationalökonomie.

DECEMBER, 1934. *Die Nationalökonomie des "New Deal."* W. RÖPKE. The author discusses the different theories underlying earlier and present policies; criticises the methods of carrying the present policy into effect; compares American policies with those of Germany. He examines the report of the Columbia University Commission and the contributions of several of its members. *Depression und Geldabwertung.* M. BOUNIATIAN. The policy adopted by Great Britain in 1931 and later followed by many countries was founded on an erroneous theory of prices, and resulted in a failure to stimulate industry and an increase of industrial troubles. Any temporary improvement of exports was at the cost of the ruin of other industries and the loss of the country's capital. Protection was everywhere encouraged and world trade diminished, gold prices lowered and depression aggravated. *Die Determinierbarkeit des Wirtschaftgeschehens.* E. SCHAMS. The prediction of economic facts is a problem of the theory of cognition, never as yet properly examined from the angle of methodology. The presuppositions of such predictions are set by the historical nature of economics and the theories employed for prediction. Being essentially non-temporal, static laws can predict nothing. Neither can dynamic laws predict anything, since history knows no laws. Herein lies the difference between the economic and the natural sciences; the latter have laws which determine all facts both generally and specially, whereas the former has only general laws, while all its facts are special, individual and temporal. Since the facts to be predicted are individual, economic prediction is an impossibility. *Beitrag zur Theorie des Zahlungsbilanzausgleichs. Automatische Kompensations-vorgänge nichtvalutarischen Art.* W. FELLNER. The readjustments of the German balance of fragments 1924–30 did not work in accordance with classical theory. Capital movements were largely balanced by trade movements, but at a later date. The changes in the balance of trade were not caused by a relative change of internal and external prices. The author propounds a non-monetary theory to explain readjustments in these conditions. *Die Bevölkerungslehre in Deutschland in der ersten Hälfte des XIX Jahrhunderts.* P. MOMBERT. The author discusses over-, under-, and optimum populations; the influence of capital; industrial and agricultural population; the effects of standards of life on the birth-rate; the distributions of wealth; the relations of population growth to economic problems. *Verzögerte Angebotsanpassung und partielles Gleichgewicht.* W. W. LEONTIEF. Continues the discussion of this problem by Ricci, Schultz, Tinbergen and Rosenstein-Rodan.

De Economist.

JULY–AUGUST, 1934. *Het coöperatief landbouwcrediet in Nederland in de laatste tien jaren.* H. J. M. JANZEN. A history of the development of agricultural credit during the last thirty years, with special reference to the Banks of Eindhoven and Utrecht. The relation of such banks to the Nederlandsche Bank is discussed. The figures cited reflect the economic and financial position of Dutch agriculture during this period. The writer emphasises the necessity of strengthening the reserves of the Banks and of allied

credit institutions. In spite of the long crisis, the co-operative credit institutions have been able to maintain their position, thanks to the insight of their leaders and the support indirectly given by the Government. *Een onderzoek naar den omvang van het. afbetalingsstelsel onder keen bepaald aantal inwoners der gemeente Delft.* TH. VAN EBBENHORST TENBERGEN. The writer, as secretary of the Delft crisis committee, had an opportunity of collecting information with regard to the extent of instalment buying. The results are here published. Of 300 families applying for assistance, 113 had bought goods on the instalment system. These are analysed according to size of family, occupation, kinds of goods bought, size of payments, period of repayment, etc. Buying of wireless and pianos occupies a smaller place than is usually believed; the purchase of furniture and clothes occupies the first place. The system is not so widespread as is usually supposed, but examples of excessive burdens are quoted. A reference is made to projected legislation. *De Poolsche Corridor. I.* F. A. G. KEESING. A discussion of the economic consequences of the peace, so far as concerns the Polish Corridor and Danzig.

SEPTEMBER, 1934. *Theorie en praktijk.* C. A. VERRIJN STUART. Professor Verrijn Stuart retired on the 17th September; this article takes the place of a farewell oration. There is an increasing discrepancy between economic theory and economic practice. Value is the central point of all economic theory. There are two lines of criticism: firstly, by those (Spann and Cassel) who hold that the theory of value impinges on the field of psychology, with which economics should have nothing to do; secondly, by those who criticise the individualistic starting-point of the theory. It is argued that the principle of self-responsibility and of free price formation provide the strongest possible spur to effort and to the increase of the general well-being. "It merely testifies to insufficient reflection on the nature and significance of our individualistic system of production, when the present difficulties are regarded as symptoms of the decline of that system. . . . The crisis of to-day is a crisis not of capitalism, but of interventionism." As examples of divergence between theory and practice, the writer refers to the paradox of restriction, compulsory combinations and tariffs. Interventionism is criticised on the general grounds that it is in the interests of producers and not of the consumers, in violation of the maxim of Adam Smith that "the interests of the producers ought to be attended to only so far as it may be necessary for promoting that of the consumers." *Grensnut en conjunctuur. I.* M. A. LIGTERINK. The utility of the whole of goods may acquire a sudden increase or diminution for various reasons: (i) increase or diminution of population; (ii) war and preparation for war; (iii) the creation of new products, or new applications of existing products, so that hitherto unknown needs, higher in rank, are satisfied; (iv) the creation of new products or cheaper methods of production of existing products, so that existing needs are satisfied with less sacrifice. The first three factors are briefly discussed; the main part of the article is devoted to a detailed discussion of the fourth. *De Poolsche Corridor. II.* F. A. G. KEESING. A continuation of the discussion of the economic consequences of the peace in the matter of the Polish Corridor, with special reference to East Prussia.

Giornale degli Economisti.

SEPTEMBER, 1934. *L'Opera scientifica di Vincenzo Porri.* F. DI FENIZIO. *Sulla permanenza media dei turisti stranieri in Italia.* F. W. OGILVIE. The description of a technical method for determining the average length of stay of foreign tourists in Italy. *I prezzi all'importazione e all'esportazione secondo fonti diverse durante la crisi.* G. TAGLIACARNE. An explanation of the divergent results obtained in the case of different indices of the relative movements of Italian export and import prices.

OCTOBER, 1934. *Scritti in onore di Ulisse Gobbi.* (*Prima serie.*) A series of seventeen short articles by Italian economists, for the most part dealing with different aspects of the work of Professor U. GOBBI, and written in his honour on the occasion of his relinquishing his chair of Economics at Milan. Among others attention may be drawn to the following: *La dottrina generale dell'assicurazione di Ulisse Gobbi.* R. BACHI. A brief summary of the important contribution made by Professor Gobbi to the pure theory of insurance. *Dalla teoria vicardiana del valore alla corporazione proprietaria.* R. BENINI. A sympathetic view of the economic and social possibilities of the Corporative State by an ardent socialist. *Oligopolio e azione corporativa.* G. DEMARIA. Some applications of the theory of oligopoly to the problems of the corporative economy. *Crepuscolo della rendita del consumatore.* C. PAGNI. A critical account of Professor Gobbi's attack on the validity of the doctrine of consumer's surplus, regarded from the standpoint of the theory of general equilibrium. *Dell'identita di alcuni teoremi di economia pura.* M. FANNO. A brief note on the pure theory of barter.

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DECEMBER, 1934. *La bilancia dei pagamenti internazionali e il movimento dei capitali in regime di valuta deprezzata.* V. MORETTI. A theoretical discussion of the effects of a depreciated currency upon the balance of trade and capital movements. *L'occupazione delle donne nelle fabbriche e negli uffici durante gli ultimi cinquant'anni e la diminuzione delle nascite.* G. TAGLIACARNE. The writer seeks to answer the question whether the fall in the Italian birth-rate during the last fifty years is due in an appreciable measure to the increase in the employment of women. The article contains some interesting statistical tables of the percentage of women employed in various industries, and of changes in the percentages between 1881 and 1931. The figures show *inter alia* that the proportion of women in industry fell from 45·25 per cent. in 1881 to 23·58 per cent. in 1931, and the proportion of women in the six main groups of occupations (excluding agriculture) from 37·73 per cent. in 1881 to 22·0 per cent. The article ends with the conclusion that "the fecundity of women employed in factories is not much below that of all Italian women."

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